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## ORIGINAL ARTICLES.

### THE BACILLUS OF TYPHOID FEVER<sup>1</sup> (TYPHUS BACILLUS OF EBERTH).

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RECENT researches support the view that the bacillus described by Eberth,<sup>2</sup> in 1880, bears an etiological relation to typhoid fever—*typhus abdominalis* of German authors; and pathologists are disposed to accept this bacillus as the veritable "germ" of typhoid fever, notwithstanding the fact that the final proof that such is the case is still wanting.

This final proof would consist in the production in man or in one of the lower animals of the specific morbid phenomena which characterize the disease in question, by the introduction of pure cultures of the bacillus into the body of a healthy individual. Evidently it is impracticable to make the test upon man, and thus far we have no satisfactory evidence that any one of the lower animals is subject to the disease as it manifests itself in man. The recent experiments of Fränkel and Simmonds<sup>3</sup> show, however, that this bacillus is pathogenic for the mouse and the rabbit. We shall refer to the experiments of these authors later.

Before the publication of Eberth's first paper Koch had observed this bacillus in sections made from the spleen and liver of typhoid cases, and had made photomicrographs from these sections. His name is, therefore, frequently associated with that of Eberth as one of the discoverers of the typhoid bacillus. Other investigators had no doubt previously observed the same organism, but some of them had improperly described it as a micrococcus. Such a mistake is easily made when the examination is made with a low power; even with a moderately high power the closely crowded colonies look like masses of micrococci, and it is only by focussing carefully upon the scattered organisms on the outer margin of a colony that the oval or rod-like form can be recognized.

Several observers had noted the presence of microorganisms in the lesions of typhoid fever prior to the publication of Eberth's paper, and Browicz,<sup>4</sup> in 1875, and Fischel,<sup>5</sup> in 1878, had recognized the presence of oval organisms in the spleen which were probably identical with the bacillus of Eberth.

The characters which serve to distinguish this bacillus are given by Eisenberg<sup>1</sup> as follows:

"MORPHOLOGY.—Bacilli, three times as long as broad, with rounded ends, may grow to long threads—*scheinfäden*—and are also found as very short rods; are mobile, and probably possess flagella; take the aniline colors less intensely than most similar organisms.

"GROWTH.—*Upon gelatine plates*: superficial grayish-white colonies with serrated margins; under a low power these resemble glass-wool and have a brownish lustre. *Stick cultures in gelatine*: growth, for the most part, superficial in the form of a grayish-white layer with serrated margins; but little growth along the track of the needle. *Upon agar-agar*: superficial growth of a whitish color. *Upon potato*: invisible growth; after forty-eight hours the pieces of potato have a moist appearance; when the surface is disturbed with a platinum needle one receives the impression that it is covered with a cohering film; under the microscope this is found to consist of long spore-bearing threads of typhus bacilli. *Upon blood serum*: grows only along the track of the needle as a milk-white layer; grows slowly.

"SPORE-FORMATION.—At 32°–40° C. spores are formed in the course of three or four days; these are located at the ends of the rods. At 20° C. spores are formed after a longer period; at lower temperatures than this, spores are no longer formed."

The bacilli are best stained in sections by placing these for twenty to twenty-four hours in a solution of methylene-blue made by pouring a saturated alcoholic solution of this dye into water until it is of an intense blue color and quite opaque. The sections are washed out in water, not acidulated, then in alcohol, and finally in cedar oil, after which they are mounted in balsam. This is the method first recommended by Gaffky.\* According to Eisenberg, the bacilli are not stained by Gram's method of double staining. A character which seems to be quite constant has been pointed out by Meyer, Friedländer, and others. This consists in the appearance of unstained portions of the bacillus which look like vacuoles in the interior or defects upon the margin of the rod. These unstained places have a circular or oval contour, and may be of one-half to three-fourths the diameter of the rod itself. They usually lie in the middle line, but may be upon the margin.

Of all the diagnostic characters given, the peculiar growth upon potato, first pointed out by Gaffky, is the most important. This serves to distinguish the typhoid bacillus from similar organisms which in their morphology and growth upon gelatine or upon agar-agar closely resemble it. The rods, as first pointed out by Eberth, have rounded ends, but this is by no means peculiar to the typhoid bacillus. They vary greatly in length, and while the prevailing form is that of a short rod three or

<sup>1</sup> Read at the meeting of the Association of American Physicians, Washington, D. C., June 18, 1886.

<sup>2</sup> Der Bacillus des Abdominal Typhus; Virchow's Archiv, 1880, Bd. 81, second paper; Ibid., 1881, Bd. 83.

<sup>3</sup> Die Ätiologische Bedeutung des Typhus-bacillus. Hamburg und Leipzig, 1886.

<sup>4</sup> Handbuch der path. Anat., Birch-Hirschfeld.

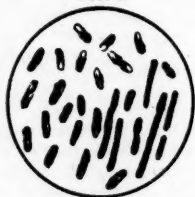
<sup>5</sup> Prager med. Wochenschrift, 1878, p. 33.

<sup>1</sup> Bakteriologische Diagnostik, Tab. 25.

<sup>2</sup> Zur Ätiologie des Abdominal Typhus, Mitth. a. d. k. Gesundheitsamte, Berlin, 1884, II, 372–420.

four times as long as broad, filaments of considerable length are developed in cultures made in gelatine or upon potato. This is shown in Figure 1, in which, also, a certain number of rods containing spores have been drawn. The amplification in this figure is about 1200 diameters.

FIG. 1.



The researches of Gaffky, recorded in his paper referred to, strongly support the view that the bacillus under consideration bears a causal relation to typhoid fever. Eberth was only successful in finding the bacillus in the lymphatic glands or in the spleen in eighteen cases out of forty in which he searched for it. On the other hand, he failed to find it in eleven cases of various nature—partly infectious processes—and in thirteen cases of tuberculosis in which the lymphatic glands were involved, and in several of which there was ulceration of the mucous membrane of the intestine.

Koch,<sup>1</sup> independently of Eberth and before the publication of his first paper, had found the same bacillus in about half of the cases examined by him, and had pointed out the fact that they were located in the deeper parts of the intestinal mucous membrane, beyond the limits of necrotic changes, and also in the spleen, whereas the long, slender bacillus of Klebs<sup>2</sup> was found only in the necrosed portions of the intestinal mucous membrane.

The researches of W. Meyer<sup>3</sup> (1881) gave a larger proportion of successful results. This author confined his attention chiefly to the swollen plaques of Peyer and follicles of the intestine which had not yet undergone ulceration. The short bacillus which had been described by Eberth and by Koch, was found in sixteen out of twenty cases examined. The observations of this author are in accord with those of Eberth as to the presence of the bacillus in greater abundance in cases of typhoid which had proved fatal at an early date.

The fact that in these earlier researches the bacilli were not found in a considerable proportion of the cases examined, is by no means fatal to the view that they bear an etiological relation to the disease. As Gaffky says in his paper referred to:

"This circumstance admits of two explanations. Either in those cases in which the bacillus has been sought with negative results, they may have perished collectively, before the disease-process which they had induced had run its course, or the proof of the presence of bacilli was wanting only on account of the technical difficulties which attend the finding of isolated colonies."

Gaffky's own researches indicate that the latter explanation is the correct one.

In 28 cases examined by this author, characteristic colonies of the bacillus were found in all but two. In one of these, 146 sections from the spleen, liver, and kidney were examined, without finding a single colony, and in the other a like result attended the examination of 62 sections from the spleen and 21 sections from the liver. In the first of these cases, however, numerous colonies were found in recent ulcers of the intestinal mucous membrane, deeply located in that portion of the tissue which was still intact. These recent ulcers were in the neighborhood of old ulcers, and are supposed to have indicated a relapse of the specific process. In the second case the negative result is thought by Gaffky to have been not at all surprising, as the patient died at the end of the fourth week of sickness, not directly from the typhoid process, but as a result of perforation of the intestine.

Gaffky has further shown that in those cases in which colonies are not found in the spleen, or in which they are extremely rare, the presence of the bacillus may be demonstrated by cultivation; and that, when proper precautions are taken, pure cultures of the bacillus may always be obtained from the spleen of a typhoid case. Hein<sup>1</sup> has been able to demonstrate the presence of the bacillus, and to start pure cultures from material drawn from the spleen of a living patient by means of a hypodermic syringe. Quite recently Philopowicz<sup>2</sup> has reported his success in obtaining cultures of the bacillus by the same method.

The fact that a failure to demonstrate the presence of microorganisms by a microscopic examination cannot be taken as proof of their absence from an organ, is well illustrated by a case (No. 18) in which the bacillus was obtained by Gaffky from the spleen and also from the liver, in pure cultures; whereas in cover-glass preparations made from the same spleen he failed to find a single rod, and more than 100 sections of the spleen were examined before he found a colony.

To obtain pure cultures from the spleen, Gaffky first carefully washes the organ with a solution of mercuric chloride—1:1000. A long incision is then made through the capsule with a knife sterilized by heat. A second incision is made in this with a second sterilized knife, and a third knife is used to make a still deeper incision in the same track. By this means the danger of conveying organisms from the surface to the interior of the organ is avoided. From the bottom of this incision a little of the soft splenic tissue is taken up on a sterilized platinum needle, and this is plunged into the solid culture medium, or drawn along the surface of the same, or added to liquefied gelatine and poured upon a glass plate. The colonies develop in an incubating oven in the course of twenty-four to forty-eight hours.

Gaffky has also shown that the bacillus is present in the liver, in the mesenteric glands, and, in a

<sup>1</sup> Mitth. a. d. k. Gesundheitsamte, Berlin, 1881, 1.

<sup>2</sup> Virchow's Archiv, 1881, Bd. 83.

<sup>3</sup> Inaug. Diss., Berlin, 1881.

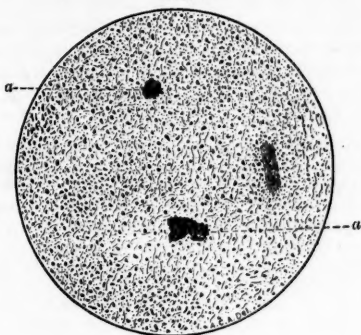
<sup>1</sup> Centralblatt f. d. med. Wiss., Oct. 4, 1884.

<sup>2</sup> Wien. med. Blätt, 1886, Nos. 6 and 7.

certain proportion of cases at least, in the kidneys, in which it was found in three cases out of seven.

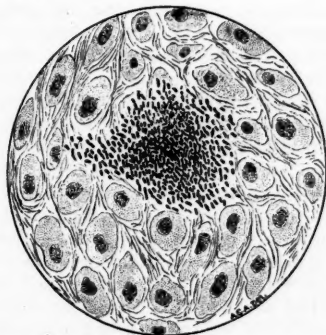
The appearance of the colonies in stained sections of the spleen is shown in Figs. 2 and 3. Two

FIG. 2.



colonies are seen in Fig. 2 (at *a, a*) as they appear under a low power—about 60 diameters. In Fig. 3 one of the colonies is seen more highly magnified—about 500 diameters.

FIG. 3.



Fränkel and Simmonds<sup>1</sup> have recently demonstrated that the bacilli multiply in the spleen after death, and that numerous colonies may be found in portions of the organ which have been kept for twenty-four to forty-eight hours before they were placed in alcohol, when other pieces from the same spleen placed in alcohol soon after the death of the patient show but few colonies, or none at all.

This observation does not in any way weaken the evidence as to the etiological rôle of the bacillus, but simply shows that dead animal matter is a suitable nidus for the typhoid germ, a fact which has been repeatedly demonstrated by epidemiologists, and insisted upon by sanitarians.

The authors last referred to confirm Gaffky as regards the constant presence of the bacillus in the spleen. In twenty-nine cases they obtained it by plate cultures twenty-five times, and remark that in the four cases attended with a negative result, this result is not at all surprising, inasmuch as the typhoid

process had terminated and death resulted from complications.

Gaffky did not succeed in obtaining cultures from the blood of typhoid fever patients, and concludes from his researches that if the bacilli are present in the circulating fluid it must be in very small numbers. He remarks that possibly the result would be different if the blood were drawn directly from a vein, instead of from the capillaries of the skin. Fränkel and Simmonds also report that gelatine, to which blood drawn from the forefinger of typical cases had been added, remained sterile when poured upon plates in the usual manner—Koch's method. The blood was obtained from six different individuals, all in an early stage of the disease—the second to the third week.

A similar experiment made with blood obtained, post-mortem, from the large veins or from the heart, also gave a negative result in every instance save one. In the exceptional case a single colony developed upon the plate. In view of these results we are inclined to attribute the successful attempts reported by some of the earlier experimenters (Letzerich,<sup>1</sup> Almquist,<sup>2</sup> Maragliano<sup>3</sup>) to accidental contamination and imperfect methods of research. The more recent work of Tayon<sup>4</sup> does not inspire any greater confidence. This author obtained cultures in bouillon by inoculating it with blood drawn from a typhoid patient, and found that these were fatal, in a few hours, to guinea-pigs, when injected into the peritoneal cavity. The lesions observed are said to have resembled those of typhoid fever—congestion and tumefaction of Peyer's plaques and of the mesenteric glands, congestion of the liver, the kidneys, etc.

The presence of the bacillus of Eberth in the alvine evacuations of typhoid patients has been demonstrated by Pfeiffer,<sup>5</sup> and by Fränkel and Simmonds.<sup>6</sup>

When Gaffky's research was made, Koch's admirable "plate method" for the separation of micro-organisms contained in such material as feces, etc., had not been published, and this author did not succeed in demonstrating the presence of the bacillus in the intestinal contents. This demonstration is evidently not an easy matter, for while the bacilli are probably always present in some portion of the intestine during the progress of the disease, it does not follow that they are present in every portion of the intestinal contents. As only a very small amount of material is used in making plate cultures, and as there are at all times a multitude of bacteria of various species in the smallest portion of fecal matter, it is not to be expected that the typhoid bacillus will be found upon every plate. Fränkel and Simmonds made eleven attempts to obtain the bacillus by the plate method, using three plates each time, as is customary with those who adhere strictly to the directions of the master, and were successful in obtaining the bacillus in three

<sup>1</sup> Loc. cit.

<sup>1</sup> Virchow's Archiv, 1876, Bd. 68.

<sup>2</sup> Nord. med. Ark., Stockholm, 1882, xiv., No. 10, x-31.

<sup>3</sup> Centralblatt f. d. med. Wiss., 1882, No. 41.

<sup>4</sup> Gaz. Méd. de Montpellier, May, 1885.

<sup>5</sup> Loc. cit.

<sup>6</sup> Deutsche med. Wochenschrift, 1885, No. 29, p. 500.



instances—in two in great numbers, and in the third in a very limited number of colonies.

The numerous attempts which have been made to communicate typhoid fever to the lower animals have given a negative result in every instance. Murchison, in 1867, fed typhoid fever discharges to swine, and Klein<sup>1</sup> has made numerous experiments of the same kind upon apes, dogs, cats, guinea-pigs, rabbits, and white mice, without result. Birch-Hirschfeld, in 1874, by feeding large quantities of typhoid stools to rabbits produced in some of them symptoms which in some respects resembled those of typhoid, but these experiments were repeated by Bahrdt<sup>2</sup> upon ten rabbits with an entirely negative result. Von Motschukoffsky<sup>3</sup> met with no better success in his attempts to induce the disease by injecting blood from typhoid patients into apes, rabbits, dogs, and cats. Walder<sup>4</sup> also experimented with fresh and with putrid discharges from typhoid patients and with blood taken from the body after death, feeding this material to calves, dogs, cats, rabbits, and fowls, without obtaining any positive results. Klebs<sup>5</sup> has also made numerous experiments of a similar nature, and in a single instance found in a rabbit, which died forty-seven hours after receiving a subcutaneous injection of a culture-fluid containing his "typhoid bacillus," pathological lesions resembling those of typhoid.

Eberth and Gaffky very properly decline to attach any importance to this solitary case, in which, as the first named writer remarks, a different explanation is possible and the possibility of an intestinal mycosis not typhoid in its nature must be considered.

Gaffky has also made numerous attempts to induce typhoid symptoms in animals by means of pure cultures of Eberth's bacillus, given with their food or injected into the peritoneal cavity or subcutaneously. The first experiments were made upon five Java apes. For a considerable time these animals were fed daily with pure cultures containing spores. The temperature of the animals was taken twice daily. The result was entirely negative. No better success attended the experiments upon rabbits (16), guinea-pigs (13), white rats (7), house mice (11), field mice (4), pigeons (2), one hen and a calf.

Cornil and Babes<sup>6</sup> report a similar negative result from pure cultures of the typhoid bacillus injected into the peritoneal cavity and into the duodenum in rabbits and guinea-pigs.

Quite recently Fränkel and Simmonds have made an extended series of experiments upon guinea-pigs, rabbits, and mice, and have shown that pure cultures of the bacillus of Eberth injected into the last mentioned animals—mice and rabbits—may induce death, and that the bacillus may again be obtained in pure cultures from their organs. It is

not claimed that the animals suffer an attack of typhoid fever as the result of these injections, but that their death is due to the introduction into their bodies of the typhoid bacillus, and that this bacillus is thereby proved to be pathogenic.

The failure to produce the characteristic lesions of typhoid in the lower animals is evidently not opposed to the view that this bacillus is the specific cause of such lesions in man. Fränkel and Simmonds quote from Koch in support of this statement, as follows:

"In my opinion it is not at all necessary when we experiment upon animals to obtain precisely the same symptoms as in man. In support of this opinion, I may refer to the infectious diseases which we are able to induce experimentally in the lower animals. Anthrax runs a very different course in animals and in man; tuberculosis does not present itself in precisely the same manner in one species of animals as in another. Phthisis, as it occurs in man, we cannot, in general, produce in animals, and, nevertheless, we cannot assert that the animals experimented upon do not suffer from tuberculosis, and that the conclusions which we draw from such experiments are not perfectly correct."

In Fränkel and Simmonds's experiments a considerable quantity of material was used and the injections were, for the most part, made into the peritoneal cavity—in mice—or into the circulation through a vein—in rabbits. The influence of quantity of material used is especially shown in the case of the mice, and the question arises whether the pathogenic power of the bacillus for these animals does not depend upon the simultaneous injection of the ptomaine developed in cultures as a result of the vital activity of the organism. Thus we read that mouse No. 4 resisted an injection of a dilute solution of culture No. 1, but succumbed to a more concentrated solution, one-fifth of a Pravaz syringe. Mouse No. 5 was not killed by the injection of one-third of a syringe of a dilute solution, but subsequently died from the injection of one-third of a syringe of a concentrated solution. Mouse No. 16, injected October 10, with half of a syringe of a very diluted culture, did not die. The injection was repeated on the 17th October with half a syringe of a concentrated solution, with fatal result.

In all, thirty-five mice were injected, with a fatal result in twenty-seven cases. In rabbits the injections were commonly made in the large vein of the ear, and the quantity of material injected was considerably greater—from one-third the contents of a hypodermatic syringe to two syringefuls. In some instances death occurred within a few hours, in others on the following day or after an interval of two or three days. It is noticeable that the results differ very greatly as to the date of death and the relative quantity of material required to produce a fatal result. This probably depends to some extent upon the size of the animal, and perhaps partly upon individual differences in resisting power.

The experiments, considered together, show that the typhoid bacillus is not pathogenic for these animals in the same sense as is the anthrax bacillus or the bacillus of rabbit septicæmia. These organisms introduced beneath the skin or into the circulation in the smallest amount infallibly produce death, and

<sup>1</sup> Report of Medical Officer of Privy Council and Local Government Board, London, 1875.

<sup>2</sup> Archiv der Heilkunde, 1876, S. 156.

<sup>3</sup> Centralblatt f. d. med. Wiss., 1876, No. 11.

<sup>4</sup> Die Typhusepidemie von Kloten, Inaug. Diss., Zurich, 1879.

<sup>5</sup> Arch. f. exp. Path. u. Pharm., Bd. xiii.

<sup>6</sup> Les Bactéries, Paris, 1885, p. 432.



at the expiration of a period of time which is tolerably uniform.

In all, seventy-nine experiments upon rabbits were made with the following result: Five injections into the intestine, five into the subcutaneous connective tissue, one into the lung, and two inhalation experiments, *all without result*; twenty injections into the peritoneal cavity furnished two, and forty-six injections into the vein of the ear, twenty positive results—*i. e.*, were fatal to the animal.

In the fatal cases the bacilli were proved to be present in the spleen by culture experiments and by microscopical examination of properly stained sections. The colonies are identical in appearance with those found in the spleen of cases of typhoid in man. The colonies were found in the spleens of the rabbits experimented upon, exactly as in the human subject, sometimes in the trabeculae, sometimes in the Malpighian bodies, sometimes free in the splenic pulp.

Brieger<sup>1</sup> has recently made some very interesting researches with reference to the chemical substances which are produced as a result of the physiological processes attending the growth of this bacillus.

Having obtained a culture from the spleen of a typhoid patient, and assured himself by comparison with a pure culture given him by Dr. Koch that he was dealing with the right organism, Brieger planted the bacillus in a culture solution containing grape-sugar and salts—*Nährsalzen*—in which it thrived admirably. Such a solution at 30° C. became clouded at the end of twenty-four hours, and gave off an evident odor of ethyl alcohol, which increased from day to day. In addition to ethyl alcohol small quantities of the volatile fat acids were produced, among them acetic acid. Lactic acid was also formed from the grape-sugar. The bacillus grew still better in albuminous culture fluids. It did not in these give rise to the production of sulphuretted hydrogen or of any of the volatile products of putrefactive decomposition, such as indol and phenol. There was no gas-formation in such cultures, even after standing for eight weeks, but a slight odor, resembling that of whey, was given off from the cultures. Repeatedly, but not in every case, Brieger succeeded in obtaining from such cultures a very deliquescent basic product. This was obtained in only very small quantities, even when the cultures had remained in the incubating oven for a month. The physiological properties of this base have convinced Brieger that it is a new ptomaine. In guinea-pigs this ptomaine produced a slight flow of saliva and frequent respiration. Later the animals lost control of their extremities, and of the muscles of the trunk; they fell upon their side, but when placed upon their legs were able to move forward a little; they, however, soon fell again and remained helpless upon their side. The pupils gradually became widely dilated, and failed to respond to light; the flow of saliva became more profuse; no convulsions occurred. Little by little, the pulsations of the heart and the breathing became more frequent. During the entire course of these

symptoms the animals had frequent liquid discharges. Death occurred in from twenty-four to forty-eight hours. Post-mortem examination showed the heart to be contracted in systole, the lungs to be hyperæmic, the intestine contracted and pale.

The experimental evidence which we have presented, considered in connection with established facts relating to the propagation of typhoid fever, seems to the writer to be convincing as regards the etiological rôle of this bacillus.

No other organism has been found, after the most careful search, in the deeper portions of the intestinal glands involved in this disease, or in the internal organs; on the other hand, this bacillus has been demonstrated to be constantly present. It is undoubtedly present during the lifetime of the patients; and is found in greater abundance in those cases which terminate fatally at an early date. It is not a putrefactive organism and is not developed in the tissues post-mortem, although it has been shown by Fränkel and Simmonds that it multiplies rapidly in the spleen after death, up to the time that putrefactive decomposition commences. This is quite in accord with what we should, *a priori*, have expected, in view of the facts relating to the propagation of typhoid fever. These facts indicate that the disease in question is due to a micro-organism which is capable of multiplication external to the human body in a variety of organic media, at comparatively low temperatures, and that it is widely distributed. From the endemic prevalence of the disease over vast areas of the earth's surface, we may infer that it is induced by a hardy micro-organism which forms spores. Eberth's bacillus complies with all of these conditions.

There are numerous facts which indicate that the development of an attack of typhoid and the severity of the symptoms depend to some extent upon the quantity of the infectious material introduced into the alimentary canal. Milk or water which has been infected directly by the discharges of typhoid patients is especially dangerous, and there is reason to believe that repeated or concentrated doses of such infectious material may be effective when a single draught of the contaminated fluid, or a greater degree of dilution, would be innocuous.

Again, we have evidence that the typhoid germs may become effective as a result of certain favorable circumstances relating to the individual or to his environment. Those agencies which reduce the vital resisting power of the tissues, and especially exposure to the emanations from putrefying material, to sewer gas, to vitiated air in overcrowded and illy ventilated apartments, etc., are recognized as favorable to the development of typhoid fever where the specific cause is present. All these facts seem to accord with the experimental evidence which indicates that the pathogenic power of the bacillus of Eberth depends upon the formation of a poisonous ptomaine rather than upon a special facility for multiplying in the tissues of a living animal. Indeed, it seems quite probable that its power to invade living animal tissues depends upon the toxic action of this ptomaine; or, it may be, of other ptomaines

<sup>1</sup> Weitere Untersuchungen über Ptomaine, Berlin, 1885.

produced under certain circumstances in the body in excess, or introduced from without. Such toxic agents may serve when the specific germ is introduced into the intestine in comparatively small numbers to give it the mastery over the vital resisting power of the tissues subject to invasion, and thus to induce an attack of the disease.

#### PRELIMINARY NOTES ON SOME OF THE PROPERTIES OF SODIUM FLUORIDE.

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THE value of the alkaline iodides and bromides in practical medicine is so great that for some diseases and morbid phenomena they deserve the title specific. These compounds and their negative elements have, therefore, long been of general interest and the subjects of much special study. The chemical and physical properties of the halogen group arrange its constituents on a scale in which gaseous chlorine is first, liquid bromine second, and solid iodine last. Chlorine, the essential halogen of physiology, is the standard from which the medicinal importance of other members of the group may be judged, for the nearer they are to it in similarity of properties the less active may we hold them as drugs; nevertheless it is, *a priori*, to be supposed that any body ranking with this elementary group is possessed of some power over the human economy, how far this may be medicinal remaining to be determined.

Fluorine is usually classed with the halogens. Its chemistry in the free state has never been satisfactorily determined. Its inorganic combinations are of a definite character, and observations drawn from their effects are positive. It appears, therefore, that the lack of interest with which chemists have long contemplated this unmanageable body need not be transferred to the therapeutic experimenter. However strange it may seem, it is still, so far as I know, true that the fluorine compounds have been almost completely neglected, and with the exception of a few recent articles on hydrofluoric acid in disease, possess no literature in medicine. So far has this disregard extended that negative qualities have been assigned to this element. Thus Nothnagel and Rossbach,<sup>1</sup> in their work on *materia medica*, say: "Fluorine is without physiological or therapeutical importance."

Reflections like the above induced me to attempt some experiments with the view of becoming more familiar with this little known body and, if possible, to determine whether any of the inorganic fluorides could be made of use in therapeutics. Want of time and proper opportunities prevent me at present from presenting a more elaborate study, but in view of the many points of interest touched upon I desire to record in these preliminary notes some of the results obtained, especially as I would wish the whole subject to receive some consideration from those more competent than myself.

Sodium fluoride is described as crystallizing in white anhydrous cubes or octahedrons, soluble in

twenty-five parts of cold water, not much more soluble in hot. Its solution attacks glass. It is insoluble in alcohol (and in glycerine). It has an alkaline reaction. The fluorides of sodium and of potassium have a great tendency to unite with HF and form acid fluorides, and consequently they readily give up half their metal to the weakest acids. One or two grains in an ounce of distilled water, with or without an alkaline carbonate, can be preserved for about two weeks with very little change.<sup>1</sup>

It possesses weak germicidal and stronger antiseptic powers. As a germicide it was not found to be active in less proportion than one to fifty, the method of Sternberg for determining the germicidal power of drugs being followed, with the exception of the hermetically sealed flasks. In place of these were substituted small test-tubes. The germs acted upon were those found in broken-down beef tea. It was found to be active as an antiseptic in the strength of one-tenth of one per cent. for clear beef decoction. An artificial culture fluid composed of tartrate of ammonium, sugar, and water, was preserved by 1 in 2733. The following experiment also illustrates this property. Three male adults were given one-eighth of a grain at 12 M., 11.55 A.M., and 12.02 P.M., respectively. Specimens of urine collected before and after the taking of the drug showed that that passed before rapidly grew turbid at the existing temperature, whilst that passed from one to two hours after remained clear during a period of seven days. That collected at the end of from three to four hours underwent the ordinary speedy decomposition. This shows that the fluoride is rapidly eliminated in the urine and that its preservative power is retained in that fluid.

A solution of two-tenths of one per cent. to which defibrinated blood is added prevents the development of germs or of any putrid odor. A solution of nine-tenths of one per cent. having an addition of one-sixteenth of its volume of defibrinated blood (rat, cat) preserved the red corpuscles for several days in their original form. On standing, the globules precipitate, the supernatant liquid being clear yellow. With a less percentage of fluoride the corpuscles become enlarged, though not globular, give out bud-like processes, and, finally, show a granular residue. In adding to the freshly defibrinated blood of an animal (rat) six to seven per cent. of the sodium salts of the halogens, the following is observed: The fluoride blood retains its scarlet

<sup>1</sup> The fluoride of sodium used was prepared in the pharmacy of the Children's Hospital, D. C. The method which I think preferable to follow, and one from which the product can be well preserved, is this: The hydrofluoric acid of commerce, which can be procured in small quantities, is added drop by drop to a not too strong solution of the acid carbonate of sodium. Care must be taken that the liquid do not at any time contain any free hydrofluoric acid. To the resulting watery solution of sodium fluoride alcohol is added in equal volume or excess; the precipitate is collected on a filter and dried. The product is in amorphous white crusts having on their under surfaces—next to the filter—a worm-eaten appearance. It can be preserved unchanged in any dry well-closed receptacle, even in a glass bottle. The commercial solution of HF often contains a trace of sulphuric acid from its manufacture, but so small in amount is the resulting sulphate that I have ignored it. In one sample of the salt prepared, no sulphuric acid was appreciable by chemical tests. The gutta-percha bottles in which hydrofluoric acid is kept can be well utilized as vessels for preparing the fluoride.

<sup>1</sup> Hdb. d. Arzneimittellehre, 5th ed., p. 259.

color. The blood to which the other salts have been added rapidly grows dark. On dilution with distilled water the fluoride liquid shows the turbidity of a fine precipitate. When the undiluted blood is evaporated on glass slides and examined under the microscope the red blood-corpuscles are seen enlarged, but of normal outline, in the presence of the fluoride—altered in various degrees and not distinctly recognizable in the others. This, of course, is observed after the blood has been kept for two or three days. By evaporation the fluoride blood forms microscopic crystals in the forms of crosses, daggers, or six-sided prisms radiating from a centre with their free ends bevelled. Spectroscopically, the blood shows the bands of oxyhæmoglobin. By exposure to the air methæmoglobin is developed.

The taste of the fluoride of sodium is alkaline and salty. When given in medicinal doses it is often noticed that the urine contains unchanged vesical epithelium and occasional cells from the pelvis of the kidney. I have not been able to practise any ready method by which its elimination can be quantitatively estimated, but that this occurs through the kidneys and very soon after absorption follows, I think, from the experiment on the urine recorded above. A saturated solution dropped upon the cornea and into the conjunctival sac of the eye of a dog results in no evidence of pain and no appearance of congestion or inflammation. Applied to the human skin its local action is also negative. Five grains, given to a dog upon meat, produce vomiting in a few minutes, which continues until the stomach is empty, and may then cease or end a little later with much retching and ejection of mucus. A similar quantity introduced into the rectum as an enema results in frequent seromucous discharges. The whole is accompanied with much tenesmus and rectal irritation. The gut is found hyperæmic or pale.

The injection of one or two grains into the subcutaneous cellular tissue and muscles produces symptoms of acute suffering.

A full-grown cat received two hypodermatic injections into the lumbar portion of the back. The respirations for a few minutes were much accelerated. Cries of distress, and savage biting at root of tail, and site of injection. Gnawed with cries of rage at anything presenting itself—a glass stopper, a hot steam-pipe. After an hour the animal is constantly moving about squeezing itself through any narrow space that can be found; six hours later it will not stir, refusing food and drink. This quiet stage continues for more than a day. About the punctures the connective tissue crepitates, the structures are moist from inflammatory effusion, and the muscular tissue is dark and softened.

The intravenous injection of a toxic dose (three grains for the cat) produces in this animal and in the dog, death in a few hours. The depth and force of the respiration are at once increased. The animal, if anaesthetized, rapidly regains consciousness, vomiting begins in a few minutes, and mucus hangs in strings from the mouth. With the vomiting may occur evacuation of feces and urine. At intervals there are movements of unrest with twitchings or tremors of the limbs. For the most part, the animal

is quiet and unconscious. This stage begins with the cessation of vomiting, which ends within the first hour. The breathing in this second stage is slow and difficult; the head is held far back and the muscles of extraordinary inspiration inserted about the jaw act strongly. In its entirety it is the picture of the last moments of asphyxia continued for several hours, and may be disturbed by a transitory return of consciousness with efforts at locomotion. The heart continues to beat after the breathing ceases. Similar symptoms result from a large but not fatal dose (two grains for the cat). The animal revives in from six to eight hours. The urine in either case is slightly albuminous and rich in fluorine.

Non-fatal doses injected into the peritoneal sac or into the substance of the liver do not leave any evidences of inflammation after two or three days. Intraperitoneal and intrapleural injections are likewise fatal to the cat, even more rapidly than intravenous, pleural injections acting more rapidly than peritoneal.

Upon toads the action seems to be similar to that described as occurring in the cat and dog. The following experiment serves to show the general features observable:

2.40 P.M. Toad received one-fourth of a grain in eight minims of water through left side of abdomen.

2.50. Tries actively to escape.

2.55. Insp. 72; quiet; head low.

2.57. Tries to escape.

3.03. Active when disturbed; insp. 28.

3.08. Active when irritated; lies flat; legs drawn close to body; breathes at intervals; insp. 2-8.

3.15. Insp. 5; sides deeply receding in expiration.

3.20. No inspiration for a minute; active when irritated.

3.25. Breathes slowly at intervals.

3.25-28. Did not breathe; turned on back; active movements to escape.

3.30. Quiet.

3.40. Active when first touched; allows itself to be placed on its back; heart beating; no respiration; ineffectual efforts to regain normal position and then perfectly quiet as if dead; heart beats 48 with varying force; occasionally a few inspirations.

3.42. Regains first position.

3.45. Efforts to vomit; during intervals of full expansion of jaws they remain half open.

3.48. Jaws closed.

3.50. Moves feebly; does not stir when touched; no inspiration.

3.53. Efforts at vomiting.

3.55. Jaws slightly separated.

3.56. Dead.

4.00. Ventricle does not contract on irritation; auricles full of blood and actively contract when stimulated; twitching of toes; lower half of ventricle white and bloodless.

The clinical testing of this drug has been sufficiently extensive to deserve mention. It was chiefly administered in one of the outdoor medical services attached to this Hospital, during a period of six months. I will briefly mention those affections in which the record of cases shows some certainty, uniformity, and success in its use, and I will premise



by stating the manner in which it was prescribed. The fluoride can be given in aqueous solution or in papers, to be dissolved as needed. It is preferable that an equal proportion of the bicarbonate of sodium be added. When prescribed in the liquid form the total quantity should not exceed two fluidounces, as the power of a strong solution to attack glass forbids its being concentrated or long kept. The tendency of any quantity exceeding the fourth of a grain to produce nausea and vomiting, limits the dose tolerated by a child to this amount. The remedial doses used ranged from one-eighth to one-sixth of a grain, thrice daily. Complaint of slight gastric irritation was made by three different patients. It ceased on reducing the dose or directing it to be taken on an empty stomach.

The largest number of instances in which opportunity was offered for the use of the fluoride were cases of headache in children. Its effects proved quite uniform in most cases, and further showed that it was useless in one variety of this very common complaint. The following is a summary of the results:

1. An adult female received a fall striking the back of the head; a few days after, intense headache began of greatest intensity at the front and summit: the remedy failed to relieve her.

2. A boy of sixteen, whilst at play, was injured about the head; after two days occipital pain began: the result was as in the former case.

These two examples, which Day calls, in children, "cerebral headache," led me to conclude that the remedy possesses no value in the pain developing in the head after a jar or blow. I have not had opportunity to test the matter further.

Gastric or sympathetic headache, from errors in diet or sources of irritation in the intestines, were uniformly relieved by the exhibition of the fluoride.

1. A girl of eight had gastric indigestion with a frontal headache for two days: the pain in the head ceased, the other symptoms remaining.

2. A girl of five years had had headache for some time from constipation: relieved.

3. A boy of twelve, headache and umbilical pain for more than a week: pain in head relieved, that in abdomen remaining.

4. A boy of ten, continuous frontal headache: disappeared under fluoride.

5. A girl of eleven, headache from acute indigestion: relieved at once.

6. A girl of ten, umbilical pain and headache; had been treated for lumbricoid worms: headache cured.

7. A boy of seven, acute indigestion from improper food: headache relieved.

8. A girl of ten, headache for two weeks: relieved.

9. A boy of ten, umbilical pain and headache: latter relieved.

In children headache is often noticed as due to cough, especially when that expiratory effort arises from an irritation in the larynx, as in hyperæmia or catarrh of that part. This form was observed four times, each yielding promptly to the fluoride. A like success was obtained for the neuralgic and

anæmic pains observed in girls and boys of nine to fourteen years, who, when debilitated from any cause, usually begin to suffer in this way from the strain of school-life. Five such cases were treated with uniform success; one of these, a girl of twelve, had suffered with paroxysms like migraine, and her state was such that all occupation had been relinquished, and her actions at times were so singular as to be considered irrational. Two of these five cases had a distinct malarial appearance and history.

The result of the treatment of intermittent and remittent fevers was very encouraging.

1. A boy of eleven, remittent fever: promptly arrested.

2. A girl of twelve, the same.

3. A girl of eleven, tertian intermittent fever: arrested in a week. Her attendance was irregular.

4. A girl of eleven, tertian intermittent: arrested at once.

5. A girl of thirteen, quotidian intermittent: arrested.

6. A child of two years, tertian intermittent, arrested at once. Returned after a week, again promptly arrested.

7. A boy of fifteen, quotidian intermittent for several weeks: improved at once. The intensity of the paroxysms reduced and disappearing on the third day.

8. A boy of fourteen, appearance of malarial cachexia, had tertian intermittent fever six months before, regular paroxysms of headache: arrested at once. Reappeared on the fourth day of treatment for a single time, and then ceased.

Three cases of epilepsy major were treated for some months. They were all of the severest type, and all were approaching the stage of beginning dementia.

The first was a white lad of sixteen, who had formerly been treated in the Children's Hospital and had been discharged after remaining entirely free from any seizures for six months. Soon after his return home the fits reappeared with increased violence and frequency and for more than a year he made the rounds of private and charity treatment according to his father's means. When this boy came under observation he was having from six to twelve seizures a week. His mind was so dulled that ideation of the simplest kind was slow and laborious. A partial cerebral paralysis of the left side developed. Upon very large doses of potassium bromide he improved very much, so that he was free from any spells for a month. Thereupon sodium fluoride was substituted and the treatment continued for more than twelve weeks. Through this time he had an occasional fit at intervals of fifteen to twenty-one days. As described by him, the attacks were of slight intensity and with no after-effects of depression. He has been employed as a carpenter's apprentice, clerk, and so on, and both his parents and he are much pleased at this result. As he was not under constant control he could not receive the additional benefits of the avoidance of exciting causes, especially those from dietetic errors.

The second case was a negro boy of eighteen years. On first presentation he was a lamentable

object. Disheartened at all treatment, his guardian was desirous of placing him in some asylum, as he was a burden to others and helpless to earn his own support. Seizures were very frequent, and his face and head were covered with fresh bruises from the falls received at the period of onset. In the treatment by sodium fluoride he began at once to improve; pain and distressing sensations in the head disappeared, his countenance lost its epileptic look and became animated and intelligent. He was treated for about three months, during which time he had six or seven fits, very slight compared to those which occurred every few days before the drug was given.

The third, a white boy of twelve, was a case similar to the preceding one. Improvement began at once. This boy was likewise relieved of severe and frequent paroxysms of headache.

These are the most striking instances of epilepsy in which this remedy's effects were witnessed, and I would further remark that they were subjected to all the unfavorable circumstances which occur in a dispensary service. The distressing symptoms of bromism may be obviated by replacing at intervals the salt producing them by the fluoride.

In conclusion, I must return thanks to those who have aided me in different ways; to Dr. G. N. Acker, Visiting Physician to the Hospital, to my friends Drs. A. F. Hofer and R. R. Gurley, to Prof. E. T. Fristoe, of Columbian University, and to W. S. Thompson, Esq., of this city.

#### GONORRHEAL TUBO-OVARIAN ABSCESS— RIGHT SIDE:

LAPAROTOMY; REMOVAL OF FALLOPIAN TUBE AND  
OVARY; RECOVERY.

BY HOWARD A. KELLY, M.D.,  
OF PHILADELPHIA.

THE subject of this disease and operation is a German brunette of medium height, twenty-three years of age, and married for three years, but has never conceived. Her husband is of the same nationality, and at present is stout and hale-looking, but at the time of marriage was spare and delicate. Three years earlier he had an attack of gonorrhœa, of which he thought himself cured in three weeks, but just before marriage he was seized with orchitis which he thought due to a strain, and suffered with it for two weeks.

The present illness of Mrs. H. began two weeks after marriage at the first menstrual period, when she was suddenly seized with severe pain in the hypogastrium, and had to be carried to bed, where she lay in constant pain extending as high as the scrobiculus, accompanied by fever, vomiting, and excessive constipation. She felt "all sore inside as if she had caught a severe cold," and was two weeks confined to bed. She has had similar attacks at intervals ever since, obliging her to go to bed for several weeks, and one in the summer of 1885 was especially marked by great pain down the outside of the right thigh.

The first visit of Mrs. H. to me, was on March 31, 1886. She began to menstruate at fourteen,

and has never missed a month since. The flow since her marriage has been increasing in amount, and for a year past has been at times excessive, lasting as long as two weeks. The odor has been foul. At the time of marriage she was spare in flesh, although she had been at one time quite stout; when I saw her she was sallow, pinched in expression, and of a cachectic hue. She had been five months under the care of a physician, who told her she had a fibroid tumor which was intimately connected with the side of her womb, and could not be removed without causing her death.

*Examination.*—A careful bimanual exploration, with due respect to the great tenderness upon deep pressure, showed that the uterus was upright in the pelvis, fixed, and forced to the left side by a mass which occupied the right of the pelvic cavity, and extended behind the organ. A very slight but distinctly perceptible movement of the uterus could be produced by pressure, the space on the left of the cervix being sufficient to admit the index finger. Douglas's pouch was filled by a growth feeling superficially hard, but not solid, and the side of the pelvis was not so packed but that a slight vertical motion could be effected; in sensation, the solidity of a fibroid was wanting.

The patient suffered excessively from constipation, and from the sensation of something being present in the rectum that could not be expelled by straining. She has sat upon a vessel for two and a half hours at a time, in the vain hope that the object might come away and relieve her distress.

*April 5, 1886.* By the careful use of daily enemata containing inspissated ox-gall, the whole bowel has been well cleaned out, and she seems generally improved by a tonic of quinine, ergotine, and monobromide of camphor. The mass in the pelvis has diminished, so that a nodular condition can be distinguished in the vagina instead of the uniform hard roof.

*21st.* By the faithful use of a hot douche, the uterus has become more free to move, and the abnormal mass can be felt to be limited to the right side of the pelvis.

*28th.* A remarkable change has occurred, the uterus lies left latero-flexed, its fundus behind the pubes an inch to the left, displaced by the globular tumor of the right broad ligament. This is a baggy mass extending from the displaced right corner to the pelvic wall and to the pelvic floor below. Its greatest diameter is upward, forward, and to the right.

*May 1.* Dr. R. P. Harris examined Mrs. H., by appointment in my office, the husband being present, and recommended to them that an early exploratory incision should be made, and, if found practicable, that the diseased growth should be removed. It was very evident to him that the health of the woman was breaking down, and required surgical relief. The next day her condition became more grave, and I decided to operate as early as practicable.

*5th.* The operation was undertaken, assisted by Drs. Jos. Hoffman and William A. Burns, and in the presence of Drs. R. P. Harris and Baldy, and Messrs. C. W. Sharpless and Henkle. Everything was abso-

lutely aseptic, no antiseptic of any kind was used; an abundant supply of pure water was constantly on hand. The bleeding from the skin and underlying tissues was unusually free. The intestines were of a deep dull red hue, with some lymph and spots of ecchymosis, exhibiting marked evidence of peritonitis. The uterus and tumor were found exactly as previously outlined. The first impression was that it would be impossible to remove the tumor without tearing out other pelvic contents, but encouraged by previous experiences, I slowly proceeded to wedge in my fingers between the tumor and pelvis, and then to separate the parts laterally, until by great care and tedious manipulation, the tumor was freed at all points but two, its broad ligament attachment and a firm adhesion to Douglas's pouch. In the latter situation, on attempting to elevate the mass, a small cyst broke, giving exit to perhaps a drachm of very fetid pus. This was immediately removed, and the operation completed with the greatest despatch consistent with safety. The pedicle was transfixed and tied, removing a long, thick Fallopian tube standing out like a ridge upon an ovary converted into a thick-walled cyst of about  $2\frac{1}{2}$  inches in diameter, and somewhat flattened, containing between two and three ounces of greenish, and very offensive fluid pus, which readily ran out when the tumor was incised after the operation had been completed.

To secure room for manipulation the intestines had been drawn out of the incision in the abdomen and wrapped in warm towels. I destroyed the whole pus-secreting surface on the pelvic floor by scraping it thoroughly with my finger and twisting a sponge into it, thus bringing up a quantity of shreds and puriform debris. The long nozzle of a syringe was then introduced, being first carried up under the liver, then over the kidneys, and then into the pelvis, carrying a stream of warm distilled water all over and among the viscera, which were also sponged over with fine sponges secured in long stem-handles. The protruding small intestine was also irrigated, sponged, wiped with fine sublimated towels, and then returned. These steps consumed much time, but were taken with elaborate care to secure perfect cleanliness.

The abdominal wound was now closed with shotted silk worm gut, four sutures to the inch. In making the final closure after all of the sutures had been introduced, it was discovered that a knuckle of small intestine had slipped down under some of the slack sutures, and had been included when they were finally drawn and shotted. This discovery, and the renewal of the sutures, saved the patient from what might have been a fatal attack of strangulation. The possibility of such an accident should be considered, when, for any cause, the flat sponge usually placed over the intestines has not been employed, as in this case, which was due to its having been infected by escaping pus. A glass drainage tube was carried down to the point from which the tumor had been enucleated, and before all the sutures were shotted, blood had welled up in it to the top. Great rigidity of the abdominal walls added much to the difficulties of every step.

The tumor removed was somewhat of the shape and size of the gizzard of a large turkey, and had the feel of a body containing a fluid. The Fallopian tube was closed at its uterine end, but much enlarged at its distal extremity which opened directly into the ovarian abscess, the fimbriae being at one point quite perceptible upon the surface of the ovary. The whole mass was of the form of a short-beaked retort, with the beak brought in contact with the surface of the body of the retort and luted to it. The internal surface of the cyst was characteristic of old abscess cavities.

The notes of the recovery of the patient are briefly as follows.

6th. In much pain, pulse 146 at morning visit, and 160 when seen at midnight.

7th. A. M. Pulse 136; temp.  $102^{\circ}$ ; no pain, no vomiting, tympanitic; drew off  $\frac{1}{2}$ ss pure blood from tube and changed the saturated dressings; P. M., pulse 120; temp.  $102^{\circ}$ ; has taken a cup of milk and limewater during the day; dressings saturated with an ounce of black blood; less tympany; rests well; metrostaxis.

8th. Pulse 96; temp. normal; no flow from tube; no pain; metrostaxis continues.

9th. Pulse 76; temp.  $98.8^{\circ}$ ; bowels moved slightly; complains of nothing but a foul taste; bowels well moved by enema, giving relief. The tube was removed, and on the next day six sutures were taken out, the remainder of the stitches were removed a week after the operation. In eight days she felt well, had a pulse of 80, and a good appetite, bowels regular.

18th. Sitting up, is still thin and pale from her long illness, but feels well, is cheerful, has a ravenous appetite, and makes no complaint of any disability except her loss of strength.

*Comments.*—It is worthy of note that the first onset of the disease occurred at the next menstrual epoch after marriage, and it is probable that the virus then penetrated the ruptured follicle and established itself in the ovary in that way. It would be difficult to understand how an entrance through the capsule of the ovary could otherwise be effected, or why it should under other circumstances elect to penetrate the peritoneal coat of the ovary rather than that of some neighboring organ or tissue. Pyosalpinx is probably a step short of this stage, and represents an adhesive inflammation between ovary and tube in such a manner as to prevent the rupture of follicles into the dangerous area.

These cases of disease in the lesser pelvis, being confined almost or entirely below the pelvic brim, usually present great difficulties to the operator. The abdominal walls are often very fat, and owing to the fact that most of the patients have either never borne children or have for many years been sterile, the rigidity and inelastic condition of the muscles cannot be overcome. The difficulties of manipulating small structures bound down in the pelvis are at times vastly greater than in the most tedious ovariectomy. The pelvic adhesions are sometimes so intimate that portions of the structures are left behind, and in cases like the one under consideration, the most efficient drainage alone is but a dangerous and



unreliable way of attempting to prevent septic peritonitis.

I propose in future to meet these difficulties as follows: In the first place, where the abdominal walls are rigid and the intestines are being forced out so as to impede the view of the pelvis, I shall enlarge the incision as much as may be necessary, and turning out the intestines envelop them in an oil-silk bag on which hot cloths can be laid, and then proceed to examine the unobstructed pelvis. Scraping, followed by a thorough application of solution of the bichloride of mercury, and careful wiping out, will probably be the best plan for treating discharging areas.

Or again, where evidences of septicæmia arise within a few days after the operation, I shall reopen several inches of the wound and wash out freely the whole abdominal cavity with hot water. I had made every preparation to do this on the second day in the case of Mrs. H., but the remarkable improvement and fall of pulse rendered interference unnecessary.

113 E. CUMBERLAND ST., PHILA.,  
May 18, 1886.

## HOSPITAL NOTES.

### OBSTETRIC CLINIC OF PROF. SPAETH, VIENNA.

Service of DR. PISKACEK.

(Reported by E. P. Davis, M.D.)

The following interesting series of obstetric cases occurred recently in the clinic of Prof. Spaeth, during the service of Dr. Ludwig Piskacek, assistant.

CASE I. *Placenta prævia totalis in a primipara; perforation of placenta by the accoucheur; spontaneous birth; recovery.*—Marie M., aged nineteen, admitted to the clinic March 2, 1886, at 2.30 P. M. Previous health good; her pregnancy had been without complications, no previous hemorrhage had occurred. First labor pains were felt at 4.30 A. M.; one hour later hemorrhage occurred.

On admission the internal examination revealed the cervix uteri obliterated, the os uteri permeable for two fingers; through the os uteri could be felt a spongy, easily bleeding body, the placenta. It was impossible by examination through the os uteri to determine whether the presenting part was the head or breech; the same was true of examination through the anterior vaginal vault. External examination showed the head over the entrance to the pelvis, the back on the left side, the breech in the fundus uteri, and the feet in the right upper portion of the uterus. Foetal heart sounds could not be heard; the fetus was thus in first position, the amount of amniotic fluid small, the head not freely movable. Labor pains increased in intensity and frequency.

As the os uteri was undilated and the patient was greatly weakened by the hemorrhage which had persisted during the forenoon, the vagina was tamponed with iodoform gauze, the patient's limbs were bandaged with flannel, two injections of ether were given and wine soup was administered. The radial pulse increased in strength and volume.

At 6.30 the tampons were removed and the os uteri admitted four fingers, and the head was slightly movable; the pains were strong, and it was resolved to perforate the placenta, and this was done; with the next pain the head became fixed in the pelvis and the hemorrhage abated; as some bleeding still persisted, three iodoform tampons were placed about the os uteri; with each pain the tampons were forced downward, and at 7 o'clock they were expelled from the vagina; with the following pain a dead female child, weighing 1600 grammes, was born.

To avoid post-partum hemorrhage, the placenta was quickly expelled by Credé's method; the vagina irrigated with a two and one-half per cent. solution of carbolic acid; an iodoform pencil was placed in the cervix, and the vagina tamponed with iodoform gauze. Immediately after delivery the uterus contracted well; but after a few moments it relaxed, and it was necessary to perform uterine massage for three hours to maintain contraction; the vaginal tampons were continued, and heat and stimulants freely used; patient's temperature 98.6° F.; pulse 140.

In the centre of the placenta was the opening through which the fetus was expelled; the membranes were intact. On the day following the tampons were renewed, and a two and one-half per cent. carbolic acid douche again given.

Temperature in the morning 38° C.; in the evening 38.8° C.; pulse 120. Patient's general condition good.

March 4, A. M., temp. 99.3° F.; P. M. 102.6°; pulse 140.

5th, A. M., temp. 99.5° F.; P. M. 102.6°.

6th, A. M., temp. 100.4° F.; P. M. 103.6°.

Lochia profuse and bloody; on the extremities small reddish blebs which resembled the appearance of scurvy, also nose-bleed. Patient was given acids and chinoidin night and morning in half gramme doses.

7th, A. M., temp. 100.4° F.; pulse 116.

P. M., temp. 102.9°.

Patient was given ergot and chinoidin, half an ounce of sherry wine every hour; appetite remained good, and patient took solid food well.

8th, A. M., temp. 100.7° F.; P. M. 101.8°.

Right parametrium somewhat sensitive.

9th, A. M., temp. 99.7° F.; P. M. 102.2°.

10th, A. M., temp. 99.3° F.; P. M. 101.3°.

11th, A. M., temp. 99° F.; P. M. 102.6°.

12th, A. M., temp. 98.6° F.; P. M. 100.8°.

13th, A. M., temp. 98.6° F.; P. M. 100.8°.

14th, A. M., temp. 98.2° F.; P. M. 99.5°.

15th, A. M., temp. 96.8° F.; P. M. 99.5°.

16th, A. M., temp. 97.7° F.

Patient was able to leave her bed on the 15th; on the 19th, at the request of her father, she was discharged from the hospital.

Examination of blood on the sixteenth day after delivery showed forty per cent. of normal hæmoglobin; corpuscles, 1,290,000 to cubic millimetre.

CASE II. *Placenta prævia partialis in a primipara; long-continued hemorrhage; transverse position of fetus; podalic version (Braxton Hicks) through os uteri admitting two fingers; extraction four hours later; recovery.*—Patient S. C., aged eighteen, was admitted on March 2d, at 7 P. M., having hemorrhage at the time of admission.

No authentic previous history could be obtained;

membranes had ruptured at 5 P. M., first pains were felt at 6. Immediately on admission an antiseptic douche was given, and three iodoform gauze tampons were introduced. As the hemorrhage was persisting in utero from the rupture of the membranes, and the patient was already very anæmic, two fingers were passed through the cervix, and podalic version was performed; the fetus was brought down as a tampon for the true pelvis and lower uterine segment.

At 11 P. M. the os uteri was dilated sufficiently to permit the extraction of the fetus without danger of lacerating the cervix; a dead child weighing 2100 grammes was delivered. In a quarter of an hour after the birth the placenta was expelled by Credé's method.

For three days after delivery the patient's temperature remained normal. In the evening of the third day an interne, acting without instructions, gave the patient an intrauterine douche; an hour later patient had a chill and temperature rose to 103.1° F.; pulse 140.

March 6, A. M., temp. 102.2°; pulse 120.

P. M., temp. 102.2°; pulse 140.

One-half gramme chinoidin three times daily. Paracetamol sensitive on pressure; a laxative given.

7th, A. M., temp. 102.2° F.; pulse 120.

P. M., temp. 102.2° F.; pulse 120.

Chinoidin and cold compresses.

8th, A. M., temp. 101.2°; P. M. { temp. 102.2°.  
pulse 104.

9th, A. M., temp. 101°; P. M. 101°.

10th, A. M., temp. 99.9°; P. M. 100.4°.

11th, A. M., temp. 98.6°; P. M. 100.8°.

12th, A. M., temp. 97.6°; P. M. 98.6°.

13th, A. M., temp. 96.8°; P. M. 97.6°.

14th, A. M., temp. 97.2°.

Patient's appetite and general condition rapidly improved; she left her bed on the 14th; on the 17th she was discharged.

CASE III. *Placenta prævia totalis in a multipara; patient admitted in the highest degree anæmic; tamponing of vagina; spontaneous birth; normal lying-in period.*—Patient H. S., admitted March 11th in condition of extreme weakness. Stated that the present was her ninth pregnancy, previous confinements normal, her last child born five years before. Until a month previous, present pregnancy had been without complications. Four weeks before admission patient had a sudden hemorrhage at night without known cause, which ceased on assuming a recumbent posture. For three days before admission patient had been about, engaged in her usual vocations.

On the night of March 10th hemorrhage recurred, and the physician called ordered ergot and cold compresses without thoroughly examining his patient. Hemorrhage did not cease, and patient was therefore brought to the hospital at 10.30 A. M.

On admission, patient was exsanguine, no labor pains were present, she was conscious. The vagina was tamponed with iodoform gauze, and by this means the hemorrhage was checked. The limbs were enveloped in flannel bandages, hot cloths placed about the patient, and stimulants were given.

About 7 P. M., the patient having partially reacted, the tampons were removed, the vagina irrigated and digital examination revealed the os uteri permeable for only two fingers, the placenta covering the os with the

exception of a small opening at one border; head presenting, the membranes intact. It was determined to rupture the membranes, and allow the head to descend. This was accordingly done, and with the descent of the head labor pains began. The vagina was again tamponed, and labor pains persisting forced the placenta into the vagina, and forced the head and body of the child past the placenta, and birth took place, the child having perished.

Collapse followed delivery, but the patient reacted well, and made an uninterrupted recovery; on the tenth day after delivery she was able to go to her home.

CASE IV. *Decapitation in a case of neglected shoulder presentation after efforts to perform podalic version had failed; extraction of the severed head with the James Simpson forceps; recovery.*—Patient, aged twenty-nine, was brought to the clinic by a midwife, at 9 P. M. March 9th, giving the following history: Married one year, the present her first pregnancy. The first indications of labor pains began on the evening of March 8th. At 4 A. M. March 9th, the membranes ruptured; a midwife was called who examined her patient about 11 A. M., and told her all was right; the pains gradually decreased, and ceased toward evening. At 7 P. M. a physician was called, who diagnosticated a transverse position, and tried for an hour to make podalic version. Failing in this Prof. Bandl was called, and he, not having the necessary assistants and conveniences for operating at the home of the patient, advised her to go to the clinic.

On admission, the patient, of more than ordinary stature, was pale, and exhausted. Measurements of the pelvis gave anterior superior spinous iliac 27 centimetres, cristæ iliac 31 centimetres, trochanters 32 centimetres, conjugata vera 10½ centimetres, conjugata externa 18 centimetres, periphery 87 centimetres. The vulvæ were œdematous; in the perineum a rupture. In the vagina was the left elbow of the child, very œdematous; the left shoulder was fixed in the entrance to the pelvis. The internal os uteri was so firmly contracted around the shoulder and neck, that from this fact, from the tetanic contraction of the uterus, and from the œdema of the shoulder, it was not possible to insert the hand in the uterus even during narcosis. In the cervix uteri were several fresh ruptures; patient's temp. 101.3° F., pulse 100. The child had been dead for eight hours.

When the ineffectual efforts at version and the serious condition of the patient were considered, it was determined to perform decapitation during narcosis. The fetus lay in the first transverse position, head at the left side, abdomen above. Although the head was at the left, the left hand of the operator was inserted, grasping the neck; the right hand introduced the Braun's decapitation hook, and fixed it; traction was then made downward, and then the hook was elevated. A complete rotation of 360 degrees separated the vertebrae, and a second severed the neck completely. By traction on the prolapsed arm the trunk was then delivered; the hand was quickly introduced to deliver the head, and traction was made on the lower jaw, but owing to the somewhat contracted pelvis this was unsuccessful. In the critical condition of the patient it was necessary to bring the labor to an end at once, and the Simpson's forceps were applied, and the head delivered; the placenta was expelled soon after the delivery of the head. A douche

of 2½ per cent. of solution of carbolic acid was given. Iodoform gauze was placed in the vagina; the rupture of the perineum was of moderate size, which the patient had sustained from the different manipulations, was closed with silk; the uterus contracted well without post-partum hemorrhage.

March 10, A. M., temp. 98.6° F.; pulse 96.  
P. M., temp. 99.5° F.; pulse 84.

Tampons removed, and douche given, and fresh tampons inserted.

March 11, A. M., temp. 101.5° F.; pulse 108.  
P. M., temp. 103.1° F.; pulse 128.

Treatment continued. Abdomen slightly sensitive; bladder parietic, requiring use of catheter.

March 12, A. M., temp. 101.5° F.; pulse 112.  
P. M., temp. 103.5° F.; pulse 120.

Lochia somewhat foul; cedema at perineal stitches; sutures were removed, and the wound found overlaid with pus and gangrenous masses; a pseudo-diphtheritic exudate was present. The vagina and uterus were free from exudate; fragments of decidua were also expelled from the uterus.

March 13, A. M., temp. 102.6° F.; pulse 116.  
P. M., temp. 103.6° F.; pulse 112.

Intrauterine douche of 2½ per cent. carbolic acid. Perineal and vaginal wounds were douched with solution of 1 : 1000 corrosive sublimate; over the wound surfaces was laid cotton saturated in sublimate solution 1 : 4000.

Patient's general condition good.

March 14. As symptoms of sublimate intoxication appeared, its use was discontinued.

A. M., temp. 101.8° F.; pulse 112.  
P. M., temp. 103° F.; pulse 132.

Free douche with carbolic solution 2½ per cent., and the wound surfaces thoroughly painted with undiluted tincture of iodine. These applications and douches night and morning, comprised the antiseptic treatment of the case until its recovery.

March 15th, A. M., temp. 102.2° F.; pulse 120.  
P. M., temp. 103.0° F.; pulse 120.

16th, A. M., temp. 98.6° F.; pulse 96.  
P. M., temp. 102.8° F.; pulse 112.

17th, A. M., temp. 99.0° F.; pulse 88.  
P. M., temp. 101.8° F.; pulse 108.

In the perineal wound islands of healthy granulations; uterus contracted well, was not sensitive; abdomen not distended, and not sensitive. For constipation, infusion of senna fol.

March 18th, A. M., temp. 98.6° F.; pulse 80.  
P. M., temp. 100.4° F.; pulse 92.

19th, A. M., temp. 98.6° F.; pulse 76.  
P. M., temp. 100.4° F.; pulse 80.

20th, A. M., temp. 97.7° F.; pulse 60.  
P. M., temp. 99.5° F.; pulse 64.

21st, A. M., temp. 98.0° F.; pulse 60.  
P. M., temp. 98.0° F.; pulse 64.

22d, A. M., temp. 97.8° F.; pulse 64.  
P. M., temp. 99.2° F.; pulse 64.

23d, A. M., temp. 88.0° F.; pulse 60.

General treatment consisted of good food, and two large spoonfuls of sherry every hour.

When convalescent, patient was transferred to gynecological ward for closure of perineum; this was readily done, and complete recovery followed.

CASE V. *Anatomical abnormality, namely, the opening of the rectum into the vagina, and the presence of only a pigmented spot at the place of the normal anus.*—

Patient gave no history of previous injury, or confinement, which could have occasioned this condition, which was, she thought, congenital.

The opening of the bowel was a few centimetres above the posterior commissure. No well-marked sphincter was found, although the patient had never suffered from incontinence of feces. In size and appearance the abnormal anus was smaller and less well marked than a normal aperture.

She was delivered in Spaeth's Clinic under the following conditions: The pelvis was somewhat contracted, and the head failing to descend in the pelvis, the forceps were used. After delivery the patient suffered from diarrhoea, although every possible precaution was taken to insure cleanliness; she made a good recovery.

## MEDICAL PROGRESS.

THE TREATMENT OF HYDRARTHROSIS OF THE KNEE BY THE METHODICAL APPLICATION OF ELASTIC PRESSURE.—Elastic compression alone exercises persistent action which produces favorable results. A very ingenious proceeding for keeping up continuous compression is that employed by RUGGI, of Boulogne. This surgeon treats hydrarthrosis of the knee by the constant application of a bag filled with shot: this exercises a uniform and permanent action, and produces very rapid absorption of the fluid. The advantage of this procedure consists in its exercising pressure without producing any strangulation, the pressure being applied to the anterior surface of the knee, leaving the other surfaces, especially the posterior, quite free. The only inconvenience attached to this method is the difficulty in maintaining the shot bag always in position. It also condemns the patient to a state of absolute immobility, in the recumbent position, during the whole length of the treatment. To obviate these drawbacks the author employs Esmarch's elastic bandage, and applies it in such a way as to overcome the objections to the ordinary methods of compression. A zinc gutter splint is applied to the back of the knee, and fixed by an ordinary bandage to the leg and thigh. Compression of the knee is now produced by the application of the elastic bandage, which embraces the posterior splint. The compressing force may be very considerable without interfering in any way with the circulation through the limb. The author cites some cases to illustrate his method, and in which he has obtained very satisfactory effects. Compression by the elastic bandage has been employed by English surgeons for many years in the treatment of joint effusions, also in the early stages of pulpy degeneration of the synovial membrane. The novelty of the modified plan suggested in this paper rests in the ingenious method adopted for preventing the bandage exercising undue and undesirable pressure on the vessels in the popliteal space, and to this end it



may, no doubt, be adopted with safety.—*Manchester Medical Chronicle*, July, 1886.

**VINEGAR AS AN ANTISEPTIC.**—ENGELMANN, of Kreuznach, has used vinegar in several cases of diphtheritis with very good results. He then tested its antiseptic properties by the usual methods, with unexpected results. He found vinegar to be more destructive to microorganisms than a 2½ per cent. solution of carbolic acid. The degrees of dilution for different methods of application were as follows:

|  |            |
|--|------------|
| For internal use . . . . .             | 1:4.       |
| As a gargle . . . . .                  | 1:2.       |
| For spraying . . . . .                 | 1:2-3.     |
| For application by the brush . . . . . | Undiluted. |

The author suggests the great desirability of further experiments in this regard.—*Centralbl. f. Gynäkologie*, July 17, 1886.

**THE DIAGNOSIS OF SYPHILIS FOUNDED ON THE PERIOD OF INCUBATION.**—DR. JOHN CHIENE presents the following practical suggestions regarding the diagnosis of syphilis:

If, after a suspicious connection, a period beyond ten days elapses before any local manifestation is evident, then the probability is that we have to deal with a case of syphilis. In such a case begin the mercury at once. In making your diagnosis do not be deluded by a local manifestation, either in the form of a gonorrhœa or a soft sore, either of which appears shortly after connection. The patient asks, "Have I syphilis?" How often is the answer given, "No," in one sense true—true of to-day, so far as any one can tell, but not necessarily true three weeks hence. Your answer should be, "I cannot tell; you *have* a gonorrhœa; you *have* a soft sore, but the time has not yet arrived to enable me to say that you *have not* syphilis. Six or eight weeks must elapse before I can speak with any certainty." The patient is not satisfied; this you cannot help.

Another snare to the unwary practitioner is that the patient always tends to blame the *last* connection. This connection is probably the cause of the gonorrhœa or soft sore, while the patient may have been inoculated previously with the syphilitic poison, which may at the time you see him be lying quiescent, and become evident at a subsequent date. At the end of the first week the gonorrhœa or soft sore becomes painfully evident; the average period of incubation in syphilis is three weeks; if two connections follow one another at an interval of less than a fortnight, it is evident that when the patient comes to you with the gonorrhœa or soft sore you cannot speak of his freedom from syphilis, which may show itself soon after the gonorrhœa, if caught from the first connection; if caught from the second connection, it may not show itself for a fortnight or three weeks after you are consulted.

The hard nodule, typical of syphilis—not a sore, not an ulcer, but an elevation, a local hypertrophy at the seat of inoculation—shows itself from ten days to eight weeks after connection. The average period of incubation is, in my experience, three weeks. This typical local hypertrophy may ulcerate if it is irritated in any way, but ulcerative destruction of tissue is an accident, not an essential of the primary lesion. This fact alone seems to me to go a great way in itself to show that the

poison which causes a soft chancre—an ulcer—is different from the poison of syphilis. I cannot say how they were related in the past; I cannot say what may be their relations in the future. Neither an antiquarian nor a prophet, but simply dealing with the conditions as they come before the practical surgeon at the present time, I have no hesitation in saying that there are two distinct poisons—the one giving rise to a local ulcer, the other to a constitutional condition; the one probably more nearly allied to a putrefactive poison, the other to a truly infective poison; the one septic, the other pathogenic.—*Edinburgh Medical Journal*, June, 1886.

**CURE OF BASEDOW'S DISEASE BY OPERATION.**—PROF. HACK records in the *Deutsche medicinische Wochenschrift*, June 24, 1886, the following case. A girl of seventeen was suffering from Basedow's disease, with well-marked symptoms. The mucous membrane of the nose happening to be so much swollen that she had to keep her mouth almost constantly open, she came to Prof. Hack for relief. He cauterized the smaller mucous membrane on the right inferior turbinated bone, and found next day, to his astonishment, that the exophthalmos on the side operated on had almost disappeared. He operated on the other side, and anxiously awaited the result, which was also favorable, but not such a brilliant success as the first attempt. Strangely enough, the other symptoms likewise improved, and the operation on the nose seems to have cured Basedow's disease itself. Prof. Hack's explanation of the result is that the disease, in this case at least, was purely reflex, and that as soon as the irritation in the nose ceased the disease vanished. The increased action, and even the increased size of the heart, he attributes to the same reflex action; the coronary arteries might be dilated, and thus give the organ an over-plentiful supply of blood. He further upholds his reflex theory by giving parallel cases.—*Manchester Medical Chronicle*, August, 1886.

**THE TREATMENT OF EPILEPSY.**—ERLENMEYER recommends this mixture, as less disagreeable to the stomach and less likely to produce an eruption than the simple bromide.

|                                |          |
|--------------------------------|----------|
| Bromide of potassium . . . . . | 4 grm.   |
| Bromide of sodium . . . . .    | 4 grm.   |
| Bromide of ammonium . . . . .  | 2 grm.   |
| Liq. amm. caust. . . . .       | 1 grm.   |
| Aërated water . . . . .        | 600 grm. |

Half to one bottle a day.—*Annales de la Société médico-chirurgicale de Liège*, June, 1886.

**NASAL INSUFFLATIONS OF QUININE IN PERTUSSIS.**—BACHEM, of Bonn, records sixteen cases of whooping-cough, in which intranasal applications of quinine were employed with advantage, and resulted in cure, as a rule, within three weeks.

Quinine muriate is finely pulverized with one-third its weight of gum-arabic, and three grains of the mixture are twice or thrice daily insufflated in such wise that the entire dose is distributed throughout the nasal chambers.

The method in question was originally proposed by Binz, in 1868, and references to those other observers who confirm the claims made for the treatment, are given in the original.—*Centralblatt f. klin. Med.*, June 12, 1886.

**LIGATION OF THE VERTEBRAL ARTERIES FOR THE RELIEF OR CURE OF EPILEPSY.**—DR. J. L. GRAY, of Chicago, records three cases in which the method just indicated was advantageously pursued, and, basing his views on these and other records, presents the following conclusions:

1. Ligation of the vertebral arteries should take its place as a recognized procedure in the treatment of certain cases of epilepsy.
2. The operation should be confined to those cases in which the exciting causes of the attacks come from some region outside the brain.
3. The arteries should be tied as high up as practicable, and the ligature should include all the fibres of the sympathetic accompanying the vessel.
4. Where the side of the brain which is first invaded by the disease can be determined, the artery of that side should be ligated.
5. Where the invasion of the disease is apparently bilateral, both vertebrals should be ligated.
6. This operation should not be done as a substitute, but as an aid to other forms of treatment for the relief or cure of epilepsy.—*The Neurological Review*, July, 1886.

**AN EASY METHOD OF DISTINGUISHING THE SOLUTIONS OF CARBOLIC ACID USED IN SURGERY.**—DR. MATTHEW HAY thus summarizes, in the *Lancet* for August 7, 1886, the means of obtaining the reactions indicated above.

The three reagents suggested are: 1. A saturated solution of chloride of sodium. This precipitates carbolic acid from solutions stronger than 4.8 to 5 per cent. at a temperature not exceeding 18° to 24° C. (64° to 75° F.). It causes no permanent precipitate in weaker solutions. 2. A carbolyzed saturated solution of carbolic acid. This precipitates carbolic acid from solutions stronger than 3½ per cent., and it does so, in the case of solutions above 4½ per cent., at any temperature below 32° to 35° C. (90° to 95° F.). It gives no permanent precipitate with weaker solutions. This is the best reagent for the simple distinction of the usual surgical solutions—2½ and 5 per cent. 3. Solid chloride of sodium. A small crystal of this precipitates carbolic acid from a saturated solution; whereas, when dissolved even to saturation in a weaker carbolic solution than 1 per cent., it gives no precipitate.

**COLD APPLICATIONS TO THE PRÆCORDIA IN FEVER.**—GRIGOROVICH presents the following conclusions regarding the effect of applying cold water to the region of the heart, based on a series of experimental observations made in the Rostoff military hospital:

1. The cold undoubtedly reaches the heart itself, and thus produces an effect on its action.
2. This effect is particularly noticeable when the cardiac beats are increased in frequency in consequence of a high temperature quickly attained, and where a certain degree of sensitiveness to a high temperature exists.
3. The effect of cold is not marked at the end of a prolonged attack of fever, pathological changes having by that time probably become established in the cardiac muscle.
4. The local application of cold is only capable of

protecting the heart-muscle from the effects of a high temperature when it is applied assiduously from the commencement of the disease.

5. Under its influence the action of the heart improves, the number of beats diminishes, while their force and amplitude increase.

6. Cold applied to the region of the heart diminishes the gravity of the *typhoid* condition and favorably influences the respiration.

7. With regard to the effect of cold applied to the region of the heart on the course of the general temperature, Grigorovich cannot at present express a decided opinion, as he did not investigate the question; but in the results which he obtained, indications may be found of the possibility of its causing some diminution of the temperature.—*The Practitioner*, August, 1886.

**SOFT CHANCER OF THE MIDDLE EAR.**—The *Gazeta Lekarska*, a Polish medical journal, contains a report by DR. GURANOWSKI of a case of soft chancre of the middle ear. The patient was a woman with a phagedænic chancre of the genitals, who, from snuffing tobacco, managed to introduce the virus into the nose, where the septum had become ulcerated, with copious discharge of the foul pus. From this the infective material must have passed through the Eustachian tube into the middle ear. Deafness and pain were complained of, and subsequently perforation of the tympanic membrane occurred, a large quantity of purulent matter being discharged through the opening and infecting in its turn the external meatus. The case was treated by the introduction of iodoform into the ear and nose, and by injecting warm water through the ear by means of the Eustachian catheter. In a month's time the patient regained her power of hearing and completely recovered. Dr. Guranowski has a great belief in the efficacy of washing the middle ear with warm water, having seen cases of severe inflammation recover under this treatment where it was feared that the only hope of saving the patient's life lay in trephining the mastoid process.—*The Lancet*, August 7, 1886.

**KAURI GUM AS A MEDICINAL SUBSTANCE.**—Many years ago DR. HAMMOND, of Bournemouth, presented me with a fine specimen of Kauri gum, which one of his sons had brought from Auckland, in New Zealand. In experimenting with the gum thus supplied I have found that it may be made to perform many useful services in medicine. When the gum is burned—and it burns briskly—it gives out a very pleasant odor which destroys the odor of putrefying organic substances most effectively. Dissolved in spirit it makes a fluid which burns in the lamp with good effect. Reduced to a fine powder and shaken with water, it communicates to the water new properties, so that sprayed in a room it renders the air ozonic. It mixes well with ointments, forms a good combination with soap, and combined with iodine is a useful deodorizer and disinfectant. The gum is from a pine, the Kauri tree, *Dammara australis*.—DR. B. W. RICHARDSON, in the *Asclepiad*, July, 1886.

**GASEOUS MEDICATION PER RECTUM.**—The ingestion of gaseous medicines by the lower bowel was the subject of a recent communication by M. L. BERGEON to the Paris Academy of Sciences (*Comptes Rendus*, July

12th). His research has extended to a variety of diseases, but for the present he only records his experience in the treatment of pulmonary phthisis. After having tried a variety of balsamic substances of parasiticide or antiseptic repute, M. Bergeon gave the preference to sulphurous mineral waters (Eaux Bonnes, Challes, etc.). A current of from four to five litres of carbonic acid gas traversing from 250 to 500 grammes of sulphurous mineral water was introduced per rectum twice in the twenty-four hours. After a few days' use, cough was notably diminished and almost suppressed, the expectoration greatly modified in quality and quantity, the sweating stopped, and the general state improved; and that not only in incipient, but also in confirmed phthisis. Daily auscultation established the disappearance of moist râles.—*The Lancet*, August 7, 1886.

**CONDITIONS WHICH AGGRAVATE SYPHILIS.**—FOURNIER maintains that the gravity of syphilis depends not so much upon the quality of the syphilitic virus as upon certain physical conditions existing in the infected individual. These conditions he discusses as follows:

1. Alcoholism. A powerful factor in increasing the virulence of this affection, favoring the spreading and increasing the intensity of the cutaneous lesions; producing severe symptoms, tertiary in character, early in the secondary stage of the disease; creating special types of eruptions, malignant, and involving large areas of the skin surface, causing more frequent outbreaks of the syphilides, depressing the system and sometimes determining a cachexia, which brings on death at times, and finally predisposing to early nervous manifestations and causing deposits in the brain and spinal marrow.

2. Age. Syphilis is always severe at the two extremes of life. In the infant the disease, whether inherited, congenital, or acquired, is very frequently fatal, this being in strong contrast with its benignity in the child, two, five, or six years of age. In the adult it is usually mild. After fifty or fifty-five years the disease begins to be severe, and in old age it is extremely virulent, the chancre having a tendency to become large and phagedenic, the syphilides ulcerating easily, tertiary symptoms, gummata, and cerebral syphilis showing themselves early.

3. Scrofula and tuberculosis act on syphilis and give rise to special symptoms, and at the same time syphilis exerts an unfavorable influence on those diseases. In those cases the syphilides have a moist, suppurating, and fistulous character; ocular, osseous, and articular lesions are frequently present; and the larynx, pharynx, and nose are early and deeply involved. In scrofulous subjects a particular, mixed kind of inflammation of the glands is noticed and in young subjects lupus is common. In patients with a tuberculous tendency pulmonary lesions are very often hastened.

4. Malaria also predisposes to grave forms of syphilis, as is known to all those who have had the opportunity of following the latter affection in persons affected with malarial toxæmia.

5. All the agents which depress the vital economy can serve as factors of virulence in syphilis, such, for instance, as extreme poverty, bad hygiene, insufficient alimentation, previous or accompanying disease, pregnancy, prolonged lactation, fatigue, mental worry, etc.; the most common, and, therefore, the most important

of these being extreme poverty.—*New Orleans Medical and Surgical Journal*, August, 1886.

**IODOFORM POISONING.**—In an article thus entitled in the *Boston Medical and Surgical Journal*, of August 5, 1886, DR. E. G. CUTLER presents a very full bibliography of the condition in question, together with the following conclusions:

1. Fresh wounds or unhealthy or tuberculous surfaces are the only ones fitted for the application of iodoform.
2. Only a thin layer or small amount of iodoform is to be applied.

3. When granulations appear healthy, iodoform should be omitted and some other non-poisonous substance substituted.

4. At the first symptom of poisoning, or coincidently with the original use of it, compounds of the alkalis and vegetable acids are to be given by the mouth at frequent intervals, as acetate of potash. If severe symptoms supervene, transfusion with common salt solution is to be resorted to, and the wound is to be washed free from iodoform with pure water and an alkaline carbonate solution and afterward powdered magnesia is to be dusted on.

**THE PATHOGENESIS OF THE ESSENTIAL ANÆMIAS.**—

SILBERMANN presents the following conclusions from an elaborate experimental investigation: 1. Progressive pernicious anæmia is induced by an increased and abnormal destruction of red and white corpuscles and by defective blood regeneration. 2. Pernicious anæmia is essentially a hæmoglobinæmia. 3. The blood in pernicious anæmia is exceptionally rich in fibrin ferment, and is thereby dangerous to the organism. 4. The frequent dermal, mucous, and retinal extravasations in this disease are due to capillary emboli or to capillary stasis. 5. The anæmic fever is of humoral origin and is conditioned by the large proportion of ferment in the blood. 6. The intermittent character of the fever corresponds with the changing phases of the blood destruction. 7. The large, fatty deposits sometimes observed in pernicious anæmia are not conditioned alone by the diminution in tissue respiration caused by decrease in hæmoglobin, but chiefly by an abnormal distribution of blood, consisting in a very considerable venous stasis and arterial anæmia. 8. In animals the gradual introduction of a blood-dissolving agent, or of hæmoglobin dissolved in serum, induces a condition which strikingly resembles pernicious anæmia. 9. One form of chlorosis, and also simple primary anæmia are essentially forms of hæmoglobinæmia of mild grade.—*Berliner klin. Wochenschrift*, July 26, 1886.

**VACCINATION IN JAPAN.**—The Japanese do not appear to have lost any of their faith in the efficacy of vaccination for the smallpox. They have just enacted a very stringent law on the subject, for, besides ordinary vaccination in the first year of infancy, it provides for at least two subsequent revaccinations at intervals of from five to seven years, so that by the time a child has reached its fifteenth year it will have been vaccinated three times. During epidemics of smallpox, local authorities also have power, when they deem it necessary, to order the vaccination of all the inhabitants of their districts, irrespective of the vaccinations required by the law.—*Sanitary Record*.



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## NEUROTIC ASTHMA AND OTHER NEUROTIC MALADIES IN THEIR RELATIONS TO INTRANASAL DISEASE.

DURING the past five years or so, the nose has been taking a progressively prominent position in the features of continental periodical medical literature; the main impetus thereto having been given by HACK, of Freiburg, who, under the term reflex neuroses, has spurred attention to the frequent association of diseases of the nasal passages with various nervous disorders. Stripped of both fanciful and hypothetic investiture, the naked truth seems to be that in many neurotic individuals, whether intellectually neurotic, æsthetically neurotic, neurosthenically neurotic, neurasthenically neurotic, hysterically neurotic, or in any other way neurotic, various irritations of the terminal fibrils of the fifth pair of nerves in the mucous membrane of the respiratory domain of the nasal passages, or of the nerves of special sense in the olfactory domain, are transmitted, sometimes through the tracts of the sympathetic system of nerves, sometimes through the reflex zones in the cerebrum, to various motor and sensory tracts, especially those in the domain of the pneumogastric. Thus these neurotic subjects are liable to manifestations of disease or disorder in distant organs. Taking all the publications together, the list claimed includes spasmodic asthma, bronchitis, bronchial spasm without asthma, spasm of the larynx, spasmodic aphonia, spasmodic cough, spasmodic sternutation, hysterical paralysis of the larynx, palpitation of the heart, chorea, epilepsy, cephalalgia, supraorbital, facial, and dental neuralgia, gastralgia, nightmare, vertigo, syncope, cutaneous nasal erythema, unilateral hyperidrosis of face or of extremities, super-salivation, facial oedema, and

articular rheumatism: all as reflex manifestations of pathological conditions existing in the nasal passages or excited therein. It is claimed, too, that these reflex neuroses are best treated by curing the intranasal disease or diseased condition from which they are reflected; with special reliance on rhino-chirurgical procedures, and particularly on such as are performed with the incandescent electric cautery.

Although pain, forcible inspirations, sternutation, lachrymation, tumefaction, and fluxion have probably always been recognized as physiological results of irritation of the normal nasal mucous membrane; and although, in suspended respiration, the abeyant respiratory and cardiac divisions of the pneumogastric, have long been habitually started into function by excitation of the nasal mucous membrane, as when ammonia is held near the nostrils of a lady in syncope; and, not to mention less recent authors who were familiar with the effects of pollen dusts, ipecacuanha powder, odoriferous emanations, and the like, so recent a writer as Trousseau had described the occasionally intimate relations of asthmatic paroxysms to nasal catarrhs and to pharyngeal disorders; and although his physiological researches had drawn from Müller the opinion that the system of respiratory nerves is capable of convulsive excitation by topical irritation of any portion of the body invested with mucous membrane (Boecker), it was not until after Volto- lini, of Breslau, had, in 1871, published an account of some instances of asthma in which the paroxysms had ceased after extirpation of nasal polypi, which he, therefore, felt reason to regard as a causal factor, that the profession seemed to realize that occlusion of the nasal passages might produce morbid manifestations at a distance.

Nearly every one who has suffered with a cold in the head, has experienced sudden relief by subsidence of turgescence in one occluded nasal passage with sudden onset of obstructive turgescence in the other. If the sufferer lies with the obstructed side uppermost it will soon become permeable, while the permeable lower side will become obstructed in its turn, and then, by turning on the back so as to catch the re-transition half way, considerable relief will often be secured; sufficient at times to enable the sufferer to go to sleep without keeping the mouth open. What the vascular connection between the structures in the two nasal passages that produces the interchange, awaits explanation from anatomist, physiologist, and clinician. Mere gravity will not account for transmission of turgescence from one set of turbinate bodies to the other on change of position from one side to the other; although it may explain the subsidence on both sides posteriorly when the subject lies on his back; for then the exceedingly vascular posterior portions of the turbinate bodies

may become surcharged, and so produce sufficient relief anteriorly to permit resumption of nasal respiration. When this posterior turgescence is so excessive, however, as to occlude the choanae and prevent nasal respiration, the subject is sometimes aroused from sleep with a paroxysm of dyspnoea, often mistaken for a paroxysm of asthma; a paroxysm relieved almost at once by opening the mouth on the one hand, or on the other by raising the body to the vertical position, and thus favoring partial subsidence of the turgescence; or by a combination of the two acts, usually intuitively. Should the patient be in too narcotic a slumber to be aroused immediately by his dyspnoea, the paroxysm may become transformed into a nightmare.

The turbinated bones are invested with a mucous membrane in actual fusion with the periosteum. Upon the whole of the lower turbinated bone, on the free border of the middle turbinated bone, and at the posterior portions of all three turbinated bones, this mucoperiosteal investment is composed in great part of an embedded cavernous system of veins (Hopmann, Zuckerkandl) with endothelial walls only (Voltolini), which permits great distention of the tissue, whether physiological or pathological. Physiologically to warm the inspired air, to ward off injurious effects from sudden atmospheric changes, to keep out foreign matters, or to favor serous effusion to wash out foreign or morbid products; pathologically, the result of irritation or of disease. Similar but less extensive turgescible tissue exists in other portions of the nasal mucous membrane, in all portions, in fact, except the olfactory fissure (Zuckerkandl, cited by Hering). This turgescible mucoperiosteal investment of the lower turbinated bone, the one most frequently implicated, comprises in its quiescent attitude fully nineteen-twentieths of the entire structure of the turbinated body, the bone forming one-twentieth only (Voltolini). Some untenable hypotheses have gained credence on the assumption that the cavernous portion of the mucoperiosteum of the turbinated bodies was a special tissue or a special organ, "*corpus cavernosum*," distinct from the tissue proper of the mucous membrane, the periosteum, and the bone. The turgescence condition, believed by some observers to be normal, and by others to be abnormal, can be excited in some subjects by stroking the tissue with a probe; but in others this procedure fails. Persistent turgescence must be regarded as abnormal. Permanent distention of this turgescible tissue sometimes leads to thickening of the connective tissue, and perhaps to alteration in the unstriped muscular fibre surrounding the vessel, and to change in the size and number of glands embedded in the meshes of the tissue. It is then a pathological hypertrophy subject to but slight subsidence, and therefore often

—not always by any means—a permanent source of irritation requiring surgical interference just as does a hypertrophied tonsil which produces continuous or progressive injurious disturbance.

Voltolini attributed the asthmatic paroxysms in his cases of nasal polyp, some with permeable, some with impermeable nasal passages, to modifications in the chemical interchanges of respiration due to mechanical obstruction thereto, rather than to reflex action; the possibility of which latter, however, he fully expressed. The infrequency of asthma associated with nasal polyp, accounts for its tardy recognition. Recently instituted statistical investigation, purposely pursued in every accessible case of asthma and of polyp, shows that not only is the proportion very small when hunted for (seven in seventy-nine cases and five of the seven in females, Lublinsky; nine in three hundred and ten cases operated upon, Boecker; six out of two hundred, Hering); but that most of the cases occur in decidedly neurotic subjects (Lublinsky), and are, therefore, reflex in origin; attributable, as expressed by Fränkel, of Berlin, some ten years after Voltolini's publication, to an abnormally irritable condition of the sensory nerves. Indeed, Fränkel had seen the asthmatic paroxysm follow the irritation of the mucous membrane as produced by the polyp. Lublinsky has called special attention to the impaired neurotic condition of all his patients with reflex neuroses of any nasal origin whatever. Many were hysterical, many anæmic, poorly nourished or psychically depressed from the most varied causes. Females predominated in his polyclinic practice, and the majority of the males had become reduced in circumstances. This disproportion was not present in private practice, but here the majority of the male patients were engaged in severe intellectual labor without proper periods of relaxation.

For some time limited sensory zones have been described as evolving the reflex actions; and, in accordance with the special groups of cases which had presented, were located by different observers in certain portions of the turbinated bodies, or of the septum chiefly; the fact being, as substantiated by pretty general observation, that under various abnormal conditions of the nervous system any portion of the nasal mucous membrane may be the point of evolution for a reflex manifestation. To go further, diseased conditions of the mouth, the gums, the pharynx, the larynx, if not the entire respiratory and alimentary tracts, have been known to give rise to reflex spasmodic disorders. If to these be added the well-known reflexes from the prepuce, and those from the vagina, the rectum, and the urethra, we but come back again to the shrewd observation of Johann Müller, that topical irritation of any mucous membrane may ex-

cite convulsive manifestations in the domain of the respiratory nerve tract; and it may be added, with fair prospect of probability, in the other domains in which reflex manifestations are said to be excited by nasal disease. And so the conclusion may be reached that nasal reflexes are frequent manifestations of the irritation of mucous membranes in general; more frequent than those from other regions, because other regions are less continuously exposed to irritant influences, atmospheric, mechanical, and chemical.

Some of the manifestations attributed to reflex neuroses are doubtless due, as intimated by Voltolini in his initial article, to the change in the rhythm of respiration and the obstruction to proper interchange of the gases of the air and of the blood.

Schech, too, has expressed the opinion that the retention of too much carbonic acid gas in the blood irritates the medulla oblongata, and thus has much to do in provoking reflex neuroses. The important part that the obstruction plays is proven, according to Boecker, by the fact that a commencing paroxysm of asthma can sometimes be cut short by turning up the tip of the nose and dilating the nostrils, so as to enlarge the passage and render respiration freer. The calming effect of applications of cocaine in arresting a paroxysm is attributed by the same writer to enlargement of the calibre of the passage, and not to any anæsthetic effect upon the sensory nerve endings. The same writer has suggested, further, that direct irritations are sometimes conveyed to the tracheal and bronchial mucous membrane which, under normal conditions, are expended on a nasal mucous membrane. To reach a conclusion in any instance, all probable sources of origin must be passed in review, lest undue credit be given to the incorrect one.

That the treatment of the nasal disease evoking the reflex disorder is often essential to the cure of such a disorder hardly admits of a doubt. That such treatment is always followed by cure at a shorter or longer period admits of many doubts. Constitutional treatment addressed to the diathetic, enthetic, and neurotic imperfections of the individual is quite as essential as topical treatment within the nose, and sometimes more necessary. Such treatment, however, often inefficacious before subsidence of the intra-nasal malady, is often promptly efficacious after its subsidence. No hard and fast rule of routine can be adopted; but each case must be managed in accordance with the general principles of good practice and of good surgery. While the judicious use of the electric cautery in certain morbid conditions of the intra-nasal tissues is to be commended, its too frequent and growing abuse in slight ailments, more safely subdued by measures less severe, is as highly reprehensible. These views are steadily gaining the support they merit; for it is becoming

more and more evident that the electric cautery sometimes does irreparable injury. Among the pernicious results reported by various writers may be enumerated adhesions of opposing surfaces, anosmia, severe hemorrhage, erythema, traumatic erysipelas, œdema of the palate, necrosis of the bones, otitis media, meningitis, temporary delirium, rheumatic swellings (sepsis?), febrile herpes, neuralgia of the fifth nerve (?), epilepsy, and asthma.

It is questionable whether the erectile tissues should be utterly destroyed under any ordinary circumstances, for an atrophic condition of the turbinated bodies is to be deplored as liable to convert an affliction that is bearable into one that is very disagreeable and mortifying.

#### THE CUTANEOUS ABSORPTION OF OILS.

RECENT clinical experience with lanolin has shown that this oil is readily susceptible of cutaneous absorption, and that on this account it is more valuable for external use and for purposes of massage than are the less diffusive organic oils or than petrolatum, which is practically unabsorbed. EWER in the *Berliner medicinische Wochenschrift*, for July 8, 1886, points out a further advantage possessed by lanolin over similar bodies, namely, that after thorough inunction in massage the remaining lanolin may be thoroughly removed by wiping with a dry cloth. When other fatty bodies have been thus employed subsequent washing with water, and even warm water and soap, becomes necessary, a procedure often disadvantageous, especially in rheumatic joint affections.

No thoroughly scientific study of the extent to which the neutral fats may be absorbed by the healthy skin has been made, but abundant clinical evidence exists that such absorption takes place, and that it, together with the benefits derived from the act of inunction, exerts a stimulating influence upon the general processes of nutrition.

One of the earliest modern studies in this subject, but one now rarely cited, is that by SIR JAMES Y. SIMPSON in the *Edinburgh Monthly Journal of Medical Sciences*, for October, 1853. He collected and recorded considerable information from physicians practising in the neighborhood of woollen factories which tended to show that those employed in the more oily processes of woollen manufacture possess a noteworthy immunity from tubercular and scrofulous disorders, and also that they were largely exempt from epidemics of scarlatina, measles, and cholera. He relates a case in which a patient by the external application of oil and with no other change in his food or treatment gained twenty-four pounds in forty-two days, and another case of a child who gained an ounce daily throughout eight weeks of similar treatment. Simpson maintained that the ab-



sorbing power of the skin increased by practice, and that the major part of a wineglassful of warm oil could, with care, be daily rubbed into and absorbed by the skin.

In 1858, DR. J. B. THOMPSON, who was, during seventeen years, surgeon to various woollen factories, emphatically corroborated, in the same journal, Simpson's thesis. He reports that in Glasgow and Aberdeen the contrast between cotton and wool workers is attested in favor of the latter, by the factory inspectors and consulting surgeons; and that in Yorkshire the better classes frequently send the delicate members of their families to the woollen mills for the benefit of their health. Of 100 young persons of from 13 to 18 years of age thus employed and under Dr. Thompson's observation, there occurred, in the course of three months, an average individual gain of  $5\frac{3}{4}$  pounds. Of these a selected eight exhibited an average increase of 17 pounds each within the time named. None of those under observation lost weight, and one, a phthisical patient, gained 2 pounds.

Sufficient has been said to show that inunction we possess a means of stimulating nutrition which might with advantage be more frequently used than it is at present.

#### HEMOSTATIC ACTION OF FARADIZATION OF THE UTERUS.

RAMAS, of Brazil, narrates, in the *Bulletin Général de Thérapeutique*, 1886, No. 1, the case of a patient who, for three months after an abortion, exhibited a scanty but constant uterine hemorrhage. Careful examination revealed no undetached portions of placenta, nor uterine tumor or polyp. The usual methods of treatment by ergotin, liquor ferri, tamponing, and hot injections were without avail.

As a last resort electricity was used, one pole being placed on the abdomen above the symphysis and the other applied directly to the neck of the uterus. The treatment was painful, but the bleeding ceased in five minutes, to return in three days, when a second application caused its permanent cessation.

Apostoli had previously advised a similar use of electricity in metritis and displacements.

#### REVIEWS.

THE PRINCIPLES AND PRACTICE OF SURGERY. By FRANK HASTINGS HAMILTON, A.M., M.D., LL.D. Third edition. 8vo. pp. xxxii. 989. New York: William Wood & Co., 1886.

DR. HAMILTON is too well known to make it necessary for us to copy the list of titles by which he has been honored, or to cite the positions which he has occupied, and which have been honored by him. He is looked up to by the entire profession as one who is entitled to confidence, and whose experience and ability give the

weight of authority to his expressed opinions. This new edition of his *System of Surgery* will, therefore, be gladly welcomed by all, and his views on many points eagerly canvassed by those who desire well-considered judgments, coming, as they do, from one whose professional career covers nearly the whole area of modern improvements in surgery.

As a system, however, the work is disappointing, which is inevitable from its narrow limits, but as a record of personal observation it is very valuable. We regard surgical observations given to the world in the later years of one who has had extended opportunities among the most valuable of literary productions. Had Dr. Hamilton restricted himself to writing such a book it would have contained the cream of this one, and enabled him to give at greater length personal experiences, unhampered by the necessity of constant condensation on account of the extended field over which he must necessarily go in completing a systematic work.

But it is time we ceased profitless speculating over what might have been, and said a few words concerning the book as it. It has two grand divisions dealing with general and regional surgery, the first part containing twenty-four, and the second part twenty chapters. In these chapters pretty much the whole realm of surgery is gone over with more or less thoroughness, but with much brevity. Even diseases of the eye, ear, and nose have chapters devoted to them. But, as we have already said, it is on account of its containing the matured opinions of Dr. Hamilton that the work will be studied. Those opinions are given concisely, but with all their author's vigor of expression, and generally the reader is left in no doubt as to the course which Dr. Hamilton himself would pursue in a given case. We regard this feature as a most important one, for while dogmatism in the young and inexperienced surgeon is out of place, and may lead to the adoption of novel and often unwise experiments on the part of his readers, it is fitting that one who has had experience should speak with decision. We have been much interested in the estimates placed upon different forms of amputation, and believe that they may generally be regarded as worthy of full confidence, and that they may be safely followed. The concluding chapters, in which modern methods of dressing wounds are glanced at, are also full of interest, and may be read with much profit.

#### SOCIETY PROCEEDINGS.

##### THE AMERICAN OPHTHALMOLOGICAL SOCIETY.

*Twenty-second Annual Meeting, held at the Pequot House, New London, Conn., July 21 and 22, 1886.*

(Concluded from page 193.)

DR. B. ALEXANDER RANDALL, of Philadelphia, reported

##### TWO CASES OF SEVERE TRAUMATISM OF THE EYE, WITH PARTIAL DISLOCATION OF THE CRYSTALLINE LENS.

In the first case, a man of fifty years, there were three points of rupture of the sclera visible on the upper

surface of the globe, with some tendency to hernia of the contents. The upper half of the lens was in the anterior chamber in front of the iris, the lower half apparently being in nearly the normal position. Its extraction was advised, but delay being asked, the operation was deferred. The lens receded under rest in bed and other appropriate measures. The scleral rupture healed, and in spite of disseminated opacities in the lens and in the vitreous, which prevented at any time a view of the eye-ground, the vision increased to about one-thirtieth of the normal. The patient has since been at work and fairly comfortable, the other eye giving no suggestion of sympathetic trouble. The injured eye shows little tendency to grow worse, although the lens is still luxated backward.

In the second case, patient a boy of twelve years, the lens was less markedly luxated, but the ophthalmoscope showed two rents in the choroid, the larger, a little outside of the macular region, the other close to the temporal margin of the optic disk. In connection with the latter, there was a reddish area of choroid, embracing the upper and inner border of the disk, where the force had apparently been insufficient to rupture the membrane, but had given it a twist, causing its inflammation and subsequent atrophy. The case progressed to an excellent recovery. The vision, which had been lost,

improved to  $\frac{6}{12 + m}$ , and the accommodation to the extent of some five dioptrics. The choroid rents healed with little but pigmentation to mark their sites. The eye, which had shown a high degree of myopic astigmatism, probably by reason of the dislocation and rotation of the lens, returned to the approximately emmetropic condition of the other eye.

The early and late appearances of the eye-ground were illustrated by colored sketches.

DR. J. S. PROUT, of Brooklyn, read a paper on

BADAL'S OPERATION: LACERATION OF THE INFRA-TROCHLEAR NERVE FOR THE RELIEF OF GLAUCOMA, ETC., WITH CASES.

In 1882-83, Badal, of Bordeaux, proposed the laceration of the infratrochlear nerve (*nerf nasal externe*, of the French) for the relief of glaucoma accompanied by pain. This nerve is the direct extension of that branch of the ophthalmic, the nasal, from which the eyeball receives its nervous supply. It emerges from the orbit just below the insertion of the pulley of the superior oblique muscle, and supplies the skin at the root and side of the nose and the caruncle, lachrymal sac, and nasal duct. It is readily reached by an incision along the margin of the orbit running from the pulley to the upper margin of the tendon of the orbicularis muscle. It is small, soft, not easily recognized, lies on the periosteum and is to be taken up by a hook with its accompanying vessels and stretched and torn by pulling directly forward. Very little bleeding occurs. Sutures are used to close the wound, which, under ordinary dressing, soon heals. Small painful nodules are sometimes left at the point of rupture. No anæsthetic is needed, as the time required is brief, and there is but little pain except when the nerve is torn. The rationale of the operation is not explained.

In severe cases, when a short delay may be fatal to the eye, he advises that the operation be combined with

evacuation of the aqueous tumor. A great advantage of the operation is that, as it does not attack the eyeball, it will be accepted by patients much more willingly than a sclerotomy or an iridectomy. Four of his patients assented to it only on condition that the eyeball should not be touched. When it has failed, he has not had better results from other operations.

Badal, in 1883, reported his results in twenty operations on eighteen patients, nearly all of whom were unpromising for any operation. Pain was relieved at once in ten cases, rapidly in one, gradually in five, not stated in four. Tension was relieved quickly in four, gradually in eight, not relieved in six, not stated in two. Sight had been long lost in seven. It was improved in four, not improved in four, and not stated in five.

Dr. Prout had performed the operation nine times on five patients. All were unpromising cases. In one there was for a time decided improvement of vision; in one there was temporary relief from moderate, and in one from severe pain. One was a case of glaucoma simplex operated on without benefit; another a case of hemorrhagic glaucoma, not benefited. Others have reported much better results. In the *American Journal of Medical Sciences*, for July, 1886, Dr. C. S. Bull refers to a paper by Lagrange, who strongly commends the operation as efficient, especially against the agonizing pain.

Dr. Prout drew the following conclusions: The operation has been shown to deserve further trial, especially in cases unfit for operations on the eyeball; it cannot make matters worse as to the eyes; relief of pain, even if only temporary, is worth procuring at the cost of a slight operation; it is important that cases be recorded so that the value of the method may be ascertained.

DR. C. S. BULL, of New York, said that in the cases where he had performed the operation for the relief of pain in glaucoma or ciliary neuralgia, while the relief was marked immediately after the operation, it was temporary only, and in every case the pain returned.

DR. H. KNAFF, of New York, read a paper on

ADVANCEMENT OF TENON'S CAPSULE IN STRABISMUS.

This operation was devised by de Wecker five years ago in the following manner. A piece of conjunctiva, five millimetres long and ten millimetres high, is detached from the region of the insertion of the tendon as a centre, leaving a small band near the cornea. Tenon's capsule is now incised near the insertion of the tendon and loosened alongside of and under the muscle. The capsule is then stitched forward by two sutures, entering through the conjunctiva to the capsule at the lower and upper edges of the muscle and coming out in the conjunctiva above and below the cornea. The greater the piece of capsule loosened and stitched forward the greater the effect. If the effect appear too great, the stitches are removed the next day. If not, they are allowed to remain four or five days. De Wecker used capsular advancement for cases of insufficiency to strengthen the weak muscle; for high degrees of strabismus, both convergent and divergent.

Dr. Knapp, during the present summer, had done the operation ten times. His operation differed from that above described in leaving a broader conjunctival flap and in using a third middle suture. His intention was to advance the whole anterior portion of the vertically

folded muscles and the capsule and produce plastic inflammation, which, through subsequent cicatrization, should shorten the parts. The operation was performed in two cases of convergent strabismus due to paralysis of the external rectus. In these cases the operation caused decided improvement. The eyes could be approached to within four millimetres of the outer commissure. The formerly paralyzed external muscle had gained a considerable degree of power. The operation was performed on two cases in which former tenotomies had not overcome the difficulty. The operation was followed by improvement in both cases. In six cases the operation was performed for convergent strabismus of high degree with considerable amblyopia. The results have all been quite good.

In none of the cases has there been any alarming reaction, although there were for some weeks redness and swelling in the region of the advanced capsule. At first, Dr. Knapp had used catgut sutures, but one gave way on one occasion and since then he has employed black silk sutures. Antiseptic precautions were employed in all cases. The speaker preferred advancement of Tenon's capsule to simple advancement of the tendon, because the operation is simpler and attended with less risk. The preservation of the natural attachment exposes the muscle less to inflammation, and there can be no undue retraction in cases of failure. His experience with limited advancement of Tenon's capsule has been quite encouraging.

DR. GEORGE C. HARLAN, of Philadelphia, asked whether this is a safe operation? Four or five years ago he did it a number of times and was much pleased with it until he had a case of panophthalmitis. Antiseptic precautions were not employed at that time.

DR. H. KNAPP replied that a year ago he considered it a dangerous operation, but that his views had changed considerably since then. Under antiseptic precautions the danger is much lessened. Where suppuration occurs within the first twenty-four hours, it is certainly the result of infection and not due to the traumatism alone.

DR. EMIL GRUENING, of New York, reported

#### A CASE OF TUMOR OF THE LEFT OCCIPITAL LOBE.\*

The chief interest of the case lay in the fact that the disease of the brain was localized by the existence of homonymous hemianopsia. Diagrams showing the course of the optic fibres were exhibited. At the autopsy a hard mass was found in the left occipital lobe and the whole cortex of the lobe was destroyed.

DR. J. S. PROUT, of Brooklyn, reported a case of

#### NEW FORMATION IN THE VITREOUS OF BOTH EYES.

The patient was a man, aged twenty years. He had never had any trouble with the eyes. In the right eye there is a body arching forward. There is no evidence of any relation to the pupilla. The speaker thought that in all probability it was a remnant of the foetal circulation of the vitreous. In the left eye there was a similar body. Drawings showing the appearance presented were exhibited.

DR. EDWARD JACKSON, of Philadelphia, presented a *Lens Series for the Refraction Ophthalmoscope*.

DR. JOHN GREEN exhibited and described a *New Series of Test Letters*.

DR. CHARLES A. OLIVER, of Philadelphia, presented

a *Set of Metric Test Letters and Words* for determining the amount and range of accommodation. They are made of six sizes of differently arranged words. Each word contains three or four of the seven letters, C D E T O L F. Each letter is made in exact conformation with the Snellen basis. The adoption of such a series puts the determination of the acuteness of vision and of accommodation upon a uniform basis.

DR. S. D. RISLEY, of Philadelphia, reported

#### A CASE OF RETINITIS ALBUMINURICA; INDUCED PREMATURE LABOR.

The patient, the wife of a physician, was seen September 24, 1884. She was between the fourth and fifth month of her third pregnancy. She had suffered with headache and giddiness. The urine had been examined a week previously and no albumen found. At this time there was marked disturbance of vision. In a previous pregnancy she had had albuminuria, but no trouble with sight. In the second pregnancy there had been no trouble.

The ophthalmoscope showed albuminuric retinitis of both eyes. The urine contained a large quantity of albumen. After consultation with her husband and Dr. William Goodell, the induction of abortion was advised, but to this the patient positively refused to consent. Finally, after consultation with her clergyman, she consented.

Labor was induced and she was delivered of a foetus at five months. She then passed into an unconscious condition, in which she remained four days. There were no convulsions; as consciousness gradually returned, evidences of right hemiplegia with aphasia were noted. The quantity of albumen gradually diminished. Six months later the lady was able to return to the office. There were still some traces of aphasia. Vision was greatly improved.

The object in reporting the case was to put on record an additional experience in this problem presenting so many serious considerations.

DR. B. ALEXANDER RANDALL exhibited a *Modification of the Loring Ophthalmoscope*, which consisted in adding a series of cylinders from 0.25 D. to 4 D.

DR. J. A. ANDREWS, of New York, read a paper on THE FREQUENT INSTILLATION OF A TWO PER CENT. SOLUTION OF NITRATE OF SILVER IN PURULENT OPHTHALMIA.

He had employed this method in twenty-five cases of gonorrhoeal ophthalmia and the eyes were seriously damaged in none of them. The cases were all severe, with much discharge, chemosis, and swelling of the lids. The applications were repeated usually three times a day, sometimes as often as five times per day. The use of the nitrate of silver is graduated to the amount of hyperæmia, and especially to the amount of swelling of the lids. If this is marked, he does not fear to repeat the instillations frequently.

DR. RUSSELL MURDOCH, of Baltimore, exhibited an *Impervious Covering for the Sponge in the Administration of Ether*.

DR. H. D. NOYES, of New York, presented a paper on the *Measurement of Astigmatism by the Ophthalmometer of Javal and Schiötz*. The instrument is useful for purposes of rapid determination, for confirmation, and in doubtful cases for diagnosis.



DR. H. D. NOYES also read the following papers by title: *Burns of the Eye by Fulminate of Silver and Fulminate of Mercury, and Cases of Foreign Body in the Globe, including Two Cases of Spontaneous Extrusion.*

#### OFFICERS FOR THE ENSUING YEAR

were elected as follows:

*President.*—Dr. William F. Norris, of Philadelphia.

*Vice-President.*—Dr. Hasket Derby, of Boston.

*Secretary and Treasurer.*—Dr. O. F. Wadsworth, of Boston.

*Corresponding Secretary.*—Dr. J. S. Prout, of Brooklyn.

The next meeting will be held at the Pequot House, New London, Conn., on the third Wednesday of July, 1887.

Adjourned.

#### CINCINNATI ACADEMY OF MEDICINE.

*Stated Meeting, May 24, 1886.*

(Concluded from page 138.)

THE PRESIDENT, JAMES T. WHITTAKER, M.D.,  
IN THE CHAIR.

#### THE SURGERY OF ECHINOCOCCUS.

DR. JOSEPH RANSOHOFF remarked that in the consideration of this part of the subject, the question of diagnosis plays an important rôle. A liver riddled with cysts, like the specimen presented, is not, as the surgeon who operated properly remarked, one adapted for surgical interference of the nature resorted to. It is an evidence, possibly, of the limit of our insight into the condition of disease, that a diagnosis which was as brilliantly made as the one in the case reported should not have been absolutely perfect. Had a compound echinococcus been recognized, it is quite certain that the ventrocystorrhaphy would not have been practised. The speaker regretted that the gentlemen who had devoted their time to the diagnosis of this disease had said nothing upon the point of differentiation between the simple and compound cyst. In looking at the specimen and in hearing the history of the case as reported, and particularly the reference to the presence of at least two or more protuberances from the hepatic surface, a suspicion as to the possible existence of a compound cyst might have been aroused. The fact that this suspicion did not arise, even after the larger cyst was aspirated, affords conclusive proof to the speaker that the differential diagnosis between simple and compound cysts is, in the present status of our methods of investigation, not always practicable. Irregularity in the outline of the hepatic margin, a feeling of nodulation, as it were, is probably the most valuable sign of the existence of numerous and distinct cysts.

So far as the treatment of hepatic hydatids is concerned, it is quite certain that in many cases nothing more than aspiration will be called for. It has been established that emptying the contents of the "bladder-worm" usually puts an end to its life history. Nor is the operation of aspirating a hydatid of the liver a dangerous procedure. Death has followed puncture, either from the escape of fluid into the peritoneal cavity or from the puncture of a large hepatic vein as happened in Mr. Bright's case. Such disastrous results are very rare after puncture. In thirty-five out of forty-six

cases collected by Murchison, in which it was resorted to, it was successful. Only one case terminated fatally from peritonitis. In ten of the forty-six cases the puncture was followed by suppuration, thus necessitating, as in the case reported, secondary incision of the sac. Of these, eight recovered and two died. When turbidity of the sac contents, or pain, indicates the presence of inflammation, the time for the usefulness of simple puncture has passed. The same is true in cases of endogenous growth of the hydatid tumor, where the removal of the contents of the mother-cyst is not always directly fatal to the younger cysts within. In all of these cases a free opening of the sac is a *sine qua non* of a successful issue. There are many ways of doing this: either by the use of a single trocar of large size, or by the use of two trocars and subsequent incision, or by the preliminary use of a caustic to secure adhesion or by ventrocystorrhaphy may the echinococcus be incised. With a fair knowledge of draining an abdominal wound and with a fair skill in suturing the cyst-wall to the abdominal wound, most cases treated after the last-named method will get well. It is a method successfully resorted to in hepatic and pelvic abscesses, in pancreatic and exceptional cases of ovarian cyst, and has been largely practised in hydatids of the liver in Germany. Even had a more accurate diagnosis been possible in the case reported, any method would in all probability have failed. The one which would have promised most is that by electrolysis. It is known that in simple cysts and in young subjects the use of electricity has been beneficial. In cases of compound hydatid it appears particularly applicable in view of the fact that without it or multiple aspiration a successful surgical interference can hardly be hoped for.

DR. P. S. CONNER remarked that he could not decide where the last speaker could have gotten his information regarding the appearance of the tumor. The tumor had no such nodular feel as has just been described. There was, as stated before, one large round mass and a smaller round mass beside it; there was nothing to indicate at the time of the operation that the cysts were so numerous or that the liver was so filled with them, and it would have been a matter of impossibility to have determined at that time, the existence of more than two cysts. There was one large rounded mass which had been emptied more than once and had refilled, and a smaller one near it. As stated in his former remarks, this was not a case for operation; but this conclusion could be arrived at only after the post-mortem examination.

Two facts are very clear in the history of hydatid disease of the liver. One is that there is an almost absolute certainty of its ending in death—in the course of four or five years at the outside, as a rule; and the other is that medical treatment is of no value. The disease, if it is to be influenced at all in its course, must be so influenced by active interference with instruments. There is really no new operation for the disease, for all our present operations are but the old operations or modifications of them. It is forty years since an Iceland physician recommended the use of electricity, and tapping is yet older. All operations at present have for their object the destruction of the hydatid, so that the fluid may be absorbed and perhaps calcification of the cyst take place, or else that suppuration may occur and per-

mit the conversion of the cyst into an abscess, to be treated like any other abscess of the organ; or, lastly, the removal of the cyst in mass. Aspiration is by no means an operation devoid of danger, and it certainly is not one to be recommended more than twice or, at most, three times in the treatment of a given case. Indeed, we may safely declare that as soon as suppuration occurs, the use of the aspirator needle is positively contraindicated. It has been shown more than once that even when an excessively small quantity of this hydatid fluid has found its way into the peritoneal cavity it has excited violent inflammation and caused death, but not invariably or necessarily so. It has further been found that after tapplings, sometimes after the first, frequently after the second, very frequently after the third, and always after repeated tapplings, suppuration occurs. It has, therefore, been positively stated that aspiration should be practised only once, and that repeated puncture should never be made. So far as danger to life is concerned, it has been shown that repeated punctures are more dangerous than a single puncture kept open, especially when such is made with a large trocar, and drainage is maintained through a large tube. At the present time, aside from aspiration, recourse is had almost invariably to opening the cyst, and that either at a single sitting or at two sittings, adhesion of the peritoneal surfaces being secured before the cyst is cut into. The old Récamier treatment by caustic applications that was so likely to cause peritonitis, and so often failed to secure adhesions, may certainly be regarded as a thing of the past. Incision of the cyst is an operation fifty years old or more, and it was repeatedly tried and abandoned on account of the excessive mortality which attended it in what is now known as the preantiseptic period. Lehotsky has recently reported twenty-five cases, four coming under his own observation, death occurring only four times, in three of which instances the fatal termination could not fairly be attributed to the operation. But even if, as has been declared by Niessen, the mortality of the operation reaches one-third, still the mortality is so much less than that which attends the do-nothing treatment, that it demands consideration.

If the cyst lies immediately under the surface of the liver, it is an easy thing to determine what is to be done; but if it lies at some depth, the decision is more difficult. Still, there is only one thing to be done, and that is to go deeper until the cyst is reached. If there has been effusion of the cyst contents into the pleural cavity, the ordinary free operation for empyema must be made.

In conclusion, Dr. Conner said, there is so great a mortality attending the let-alone treatment (and the risk of aspiration is by no means a slight one) that there can be no question as to the propriety of making an incision into the cyst. Cases presenting peculiarities may demand special treatment—*e. g.*, removal in mass or ligation of the pedicle and cutting away the major part of the sac. The peculiarities may even be such as to add seriously to the difficulties of diagnosis. In one of Pean's cases in which the tumor projected directly forward in mass as large as a child's head, it rested on the abdominal aorta so as to receive an impulse from that vessel, showing that it may be possible for a liver hydatid to be mistaken for an abdominal aneurism.

#### ECHINOCOCCUS OF THE EYE.

DR. DAVID DE BECK remarked that the interest the disease might have in ophthalmology was purely clinical. About forty cases of echinococcus of the eye have been reported; all these by French and German writers, none by Americans. The echinococcus in this region is distinguished from the cysticercus in that the former cyst is always found in the orbit, whereas the latter usually occurs under some of the membranes of the eye and is termed subconjunctival, etc. Only three unquestioned cases of cysticercus of the interior of the eye have been reported. In most cases of this affection the diagnosis has been made after the operation for its removal.

DR. WHITTAKER, in concluding the discussion, said that as the hour for adjournment had arrived he would make but two or three remarks. He had already spoken of the rarity of the disease in this country, with the reservation that undiagnosed cases recognized on autopsy are not reported. One of our hospital pathologists here said that he had seen three such cases in this city. Failure to recognize echinococcus is not confined to this city. Thierfelder observes that but seven of thirteen cases were discovered during life at Rostock, and Bröcke states that but thirteen of twenty-two cases were recognized at the Berlin Charité. Madelung maintains that only about one-third of the cases are generally diagnosed during life. It must be remembered, however, that most of these cases occurred before the days of aspiration. The use of the aspirator simplifies the diagnosis immeasurably.

He thought that for practical purposes the chemical is superior to the microscopic test, as it is the exception, and not the rule, to find either scolices, hooklets, or characteristic fragments of membrane in the specimens examined.

It was his opinion that most cases outside of Iceland were not contracted directly from dogs, as there is nowhere else such intimate relation with dogs. Besides, dogs are not so frequently affected with *tænia* as is commonly believed. Krabbe, of Copenhagen, examined the bodies of 500 dogs with reference to this point and found but 0.6 per cent. affected with *tænia echinococcus*. König intimates that the use of the *album grecum*, the dried feces of dogs, as a medicine, by the common people of Mecklenberg, might account for the frequency of the disease in that country. Paullini, in 1699, wrote a book on the virtue of excrement in the cure of all disease. But most of the druggists respond to the call for the "*witten entsaun*," as it is called, with magnesia, and Madelung observes that when the real *album grecum* is furnished, it is old desiccated matter long exposed to the elements, whereby all organic matter is thoroughly destroyed.

The view that most cases come from sheep, by the ingestion, not of the ova, but of the cysts themselves in the liver of this animal, is supported by the frequency of the disease in Victoria, where the proportion of sheep to human beings is 100 to 1. Victoria ranks next to Iceland in the frequency of deaths from this disease.

Wechselmann, of Rostock, has made an intensely interesting contribution to the subject of the effects of bile upon echinococcus cysts, based upon the reports of twenty-five cases in which this accident occurred. Grünberg and Löbaker had expressed the opinion that

the prognosis was thereby rendered more grave, but wider experience has shown that bile has rather a favorable effect through its antiseptic properties. Uterhart observed that the clear fluid of echinococcus usually becomes opaque in twenty-four and decomposed in thirty-six hours, while, when mixed with bile it remains pure and without odor for six days, and begins to give the odor of decomposition only on the seventh day. Kussmaul, likewise, remarks upon the antiseptic effect of bile upon pus, and Bartels used diluted ox-gall successfully as an antiseptic in a case of peripleuritic abscess. But in none of Wechselsmann's cases could it be said that the bile exercised anything like a curative influence. The compound character of the present case could not have been recognized by any possibility *intra vitam*. The liver, as stated, was enlarged uniformly, and was by no means as large as many an amyloid liver. The speaker had seen many cases of abscess in which the liver was not larger than in this case. In fact, the whole circumference of this liver, as stated upon the exhibition of the specimen to the Academy a few weeks ago, was but twenty-three inches. The greatest diameters were eleven to fourteen inches. When pathologists teach us how to distinguish in life between endogenous and exogenous echinococcus cysts, we shall be better able to recognize compound cysts. He insisted that these cysts should be called compound, not multilocular. A multilocular echinococcus, as has been sufficiently emphasized this evening, is a very different condition. It occurs so extremely rarely—but one case in one hundred and eighty—as to have insignificant practical value.

## CORRESPONDENCE.

### FARADIZATION IN EXTRAUTERINE PREGNANCY.

To the Editor of THE MEDICAL NEWS,

SIR: But for several palpable inaccuracies in the statements of Mr. Lawson Tait given in THE MEDICAL NEWS of August 14, 1886, and the expressed wishes of medical friends, I should have allowed his letter to you to have remained unanswered, as a journalistic contest is not at all to my taste. With what Mr. Tait says of me personally, I have nothing to do, but his remarks involve the diagnostic ability of many who stand high in the ranks of American gynecologists. He appears to think that an extrauterine pregnancy cannot be detected in the early stages of its formation, and that all those who claim to have done so, and to have destroyed the foetus by faradization, have been in error. He still insists that needles are used in the feticidal act, although assured that in no instance has electrolysis or galvanopuncture been employed in this country. Mr. Tait should bear in mind that faradization has been resorted to in America in cases where the foetal development was computed at from eight weeks to more than four months; whereas, in his twenty-five reported cases of ligation and incision, rupture took place so early that he was able to find the foetus in only two of them. He calls these "*primary*" laparotomies, and finds fault with me for stating that there had been but 19 of this class, with 15 deaths, when he had himself saved 24 out of 25. I was slightly in error here,

for two cases reported as having been saved under Dr. August Martin, of Berlin, have, by a paper directly received within a few days, been shown not to belong to the primary list, one foetus having been carried twelve years, and the other three months. This brings me back to the original record searched out by Prof. Litzmann, of Kiel, in which are 17 cases and 2 recoveries.

What is a *primary* laparotomy in cases of extrauterine pregnancy? Certainly not such as Mr. Tait would make it appear. The classification into *primary* and *secondary* is much older than this operation of his, and has a very decided bearing upon the prognosis of an extrauterine case, the first having for years been the opprobrium of obstetrical surgery, while the second has been many times performed with success. The *primary* operation is undertaken in the interest of two lives, and the foetus must not only be living, but viable. The *secondary* is performed a sufficient time after the death of the foetus to effect the changes in the vascular supply of the placenta which follow upon the cessation of its functional activity, and thus secure its exfoliation without hemorrhage. Mr. Tait says that he has performed 7 of the primary laparotomies recognized as such in the obstetrical works of Playfair and others, and has saved 6 of the women, and that 3 of the children are now living and growing up. I can find but one of these reported as yet, and hope he will make a full statement of his method of operating upon the six that recovered, so that others may profit thereby and enter upon a field of surgery in which he alone shines as a victor, having saved thrice as many out of seven women as the rest of the world has out of seventeen.

Possibly Mr. Tait may make an exception as to the diagnostic acumen of Prof. T. G. Thomas, one of the operators referred to in his letter, when he learns that the little foetus destroyed by him has more recently escaped by the patient's rectum. For one, I should be as much inclined to trust the diagnostic ability of Dr. Reeve, of Dayton, Dr. Garrigues, of New York, and others referred to by him, in cases such as they claim to have operated upon, as I would that of Mr. Tait himself, who is by no means infallible, although very expert. If the rectal method of Simon was requisite in a difficult case, I should have much more faith in the skilful little hand of a Morisani than in his. If Dr. M——, of Buffalo, made a mistake in one of his cases, what right has he to claim that he must have done so in his other five. If a surgeon, ordinarily skilful, plunges a trocar into a cancerous tumor of the liver, in the belief that he is about to open a hydatid cyst, must it be claimed that he is never to be able to make a true differential diagnosis? It is a mistake to claim that a woman has no symptoms that would direct an obstetrician to the discovery of an extrauterine pregnancy. She may not have had in the twenty-three cases in which Mr. Tait did not find any foetus, but at a later period she has feelings that, if expressed, would, in many instances, lead a man of skill to recognize her abnormal state. This, I am assured of, would have been the case in a lady who recently died from rupture of a foetal cyst in this city, had she spoken of her sensations in time. The obstetrical surgeons of this country, especially those who have had a large obstetrical experience, are by no means defective in skill when it becomes necessary to decide upon the nature of an abnormal growth



within the pelvis. Mr. Tait will admit the fact that a Fallopian fetal cyst, when it has not ruptured early, will often gravitate into the Douglas cul-de-sac as it becomes heavier, provided it be located near enough to the distal end of the tube to admit of it. In such an event the test of *ballottement* may be and has been used, and the fetus has been removed through the vagina by incision. It is in this location that the fetus has been destroyed by faradization *without needles*.

ROBERT P. HARRIS.

329 SOUTH TWELFTH ST., PHILADELPHIA,  
August 16, 1886.

To the Editor of THE MEDICAL NEWS,

SIR: In your issue of Aug. 14, 1886, I notice a letter from Mr. Lawson Tait in which he alludes to a specialist in Buffalo, evidently meaning the writer, in the course of which he throws doubt on my diagnosis of "six successful cases of electrolytic treatment of ectopic gestation," which he says I have repeatedly stated that I have had.

Mr. Tait does not make his assertion as coming second-hand, but as a generally accepted fact, patent to all. As I never saw Mr. Tait, though I hope to have that pleasure some day, he must refer to my written statements.

The only article on this subject I have ever published was in THE MEDICAL NEWS for July 11, 1885, in which I reported "four (not six) cases of extrauterine pregnancy."

One of these cases was in the practice of Prof. E. V. Stoddard, of Rochester, and was never seen by me, as I distinctly state. Of the three which came under my own notice, the first was suffering from rupture of the sac into the broad ligament when I first saw her. I concluded that the child was dead and that the woman would probably recover, but "in order to make sure of the death of the child I advised that a current of electricity should be passed through the swelling every day for a week. This treatment was carried out and the prognosis fully justified." The second case went to term with a living child, which was removed by laparotomy after its death. One other case remains, and that I shall always believe was an undoubted case of tubal pregnancy, cured not by electrolysis but by electric fœticide.

In my published record, then, I have never claimed to have seen but one successful case of the electrical treatment of ectopic gestation.

Of the fifth case, Mr. Tait could have been cognizant only by hearsay, as I never have published a word of it. The woman had a tumor at the side of the uterus, with certain indefinite symptoms, which I thought might indicate an extrauterine gestation. I used electricity after she had refused laparotomy, and she got better but passed out of my sight. I was never sure of this diagnosis and never reported the case or considered it of any value as evidence—as I did not know its termination.

The sixth case to which he refers, and which he says I was made to discover was nothing of the kind, was as follows:

The woman came into the hospital to be delivered, firmly believing that she was pregnant. As labor did not come on, I was asked to see her and diagnosticated a

tumor attached to the uterus and no uterine gestation. Dr. R. S. Sutton, who happened to be visiting me, agreed in this opinion, but was not prepared, in a hurried examination, to diagnosticate the character of the tumor, being inclined to the belief that it was a fibroid. After keeping her in my ward for a while and carefully examining her under ether, exploring the uterus with my finger and questioning her repeatedly, I came to the conclusion that the tumor was connected with the tube, and that it *might* be a case of tubal pregnancy. I, therefore, applied the battery several times, after which she got up, professing to feel much better, and at her urgent request I sent her to her home in the country without ever having been entirely satisfied with my diagnosis. Now what was the result? Soon her pain returned, and my friend, Dr. W. G. Wylie, of New York, was called to see her. He wrote me, and I gave him my view of the case, stating *positively* that it was one of extrauterine pregnancy. This I did, as I had received only the day before a letter from the patient in which she stated that her physicians (two) had both detected undoubted fetal movements in the tumor, which would, of course, make the diagnosis conclusive. This, as it turned out, was not true, but I thought it was when I wrote Dr. Wylie. Dr. Wylie did abdominal section and found a "cyst of the Fallopian tube" with very thick walls "containing three pints of clear, straw-colored fluid" (*American Journal of Obstetrics*, January, 1886, p. 75).

What was the cause of the cyst? May it not have been a tube dilated by an ectopic gestation, and may I not have been right after all? I maintain that this is within the bounds of possibility, as it is well known that a fetus, when destroyed early in pregnancy, may be entirely absorbed. In support of this, I have in my possession an ovum which I removed intact from the uterus, in which no trace of the fetus could be found, though the placental remains were there and a trace of the cord.

I have seen several other cases of supposed ectopic gestation, but in none of them have I ever claimed, verbally or otherwise, to have killed the fetus by electricity. So the six cases are narrowed down to one. If Mr. Tait would give a little more time to that "patient investigation of statistics" which he so much admires in Dr. Harris, he would not so frequently lay himself open to adverse criticism.

One word more. Mr. Tait states that "it is perfectly impossible to recognize them [cases of extrauterine pregnancy] before rupture has taken place." Perhaps, if he would study the symptomatology of the accident, follow the American method, and examine his patients in the normal position, and spend a little more time in his examinations than he confessedly gives, he might do better in the matter of diagnosis. Certainly, the Americans, to say nothing of other nationalities who have claimed to have succeeded in making the diagnosis, are some of them so eminent and so skilful that their combined positive testimony must much more than outweigh the unsupported negative opinion of any one man, no matter how distinguished he may be. I will only mention, among others, the names of Emmet, Thomas, Lusk, Mundé, B. Emmet, and Garrigues, in New York City alone. Almost the entire medical world is against Mr. Tait when he says

that "they give rise to no symptoms at all until rupture has taken place." Scores of cases might be cited to prove the contrary, but I will not take up any more space, as Dr. Harris will, doubtless, have something to say on this point.

MATTHEW D. MANN.

BUFFALO, August 15, 1886

To the Editor of THE MEDICAL NEWS,

SIR: The gist of the question as to the value of faradization in extrauterine pregnancy depends largely upon one point in diagnosis. Mr. Tait says, in his letter in THE NEWS of this date, that *no* symptoms of trouble arise until *after* rupture has taken place in tubal pregnancy, and that women do not complain until this deplorable event has occurred. Further on, he talks of "electrolysis" by faradization, and mixes "galvanic needles" just as unnecessarily with the subject. Mr. Tait positively asserts that electricity "as a method of *preventing* rupture is absurd." (Italics mine.) This is just where Mr. Tait shows his lack of "practical experience" on this point.

During the last fifteen years I have, through the kindness of professional friends, seen nearly a score of supposed extrauterine pregnancies, most of which I could not accept as such, and the subsequent history of which sustained my view. I have, however, personally treated five cases of undoubted extrauterine pregnancy, in which faradization successfully *arrested* the gestation and *prevented* rupture of the tube. In an additional case of collapse believed to be from rupture of the tube, faradism arrested the hemorrhage due to "torn placental vessels" and the lady recovered. This case I saw only *after* the rupture. Operation was peremptorily refused. The history was clear in the opinion of three physicians, two of whom were of large obstetric experience, and the result here was certainly not "a farce." Had the gestation been arrested sooner by electricity, severe hemorrhage from the placental vessels could not have occurred. The main object is to interfere in the earliest possible stage and before the placenta is much developed; hence, the *fœtus* is the source of danger. Destroy the *fœtus*, and the placental growth is stopped. I do not hesitate to say that in these cases the diagnosis was both correctly and easily made. The smallest tumor was as large as a walnut and in the other cases the tumor was somewhat larger; the signs of pregnancy were undoubted, yet the uterus was empty. We have in America obstetricians competent to diagnose extrauterine pregnancy, and this prior to rupture of the tube, for our women *do* suffer before that calamity overtakes them, and this could be verified did space permit reports. This kind of skill, though not so showy as operative work, yet has its place.

That faradization, properly employed, will destroy an ectopic pregnancy, and that galvanism will thereafter produce absorption of the then foreign body, is beyond cavil; and that feticide is, in such cases, morally right and humane, because it is the only certain method of saving maternal life, cannot be honestly controverted. Mr. Tait's opinion to the contrary notwithstanding.

Very respectfully,

WM. R. D. BLACKWOOD, M.D.,  
Neurologist and Electrician, Presbyterian Hospital.

PHILADELPHIA, August 14, 1886.

## NEWS ITEMS.

**SURGEON-GENERALSHIP OF THE ARMY.**—A special despatch to the *New York Tribune*, dated Washington, August 17, states that the retirement of Surgeon-General Murray of the Army, and the departure of President Cleveland before filling the vacancy, tend to make "Army politics" somewhat active. Under the law the President may select a surgeon-general from among all the officers of the medical corps of the army, which contains a large number of ambitious and able men. If seniority of rank and service should govern, of course Colonel J. H. Baxter, the Acting Surgeon-General, would succeed to the vacancy, but nearly a score of men whose names are lower on the list are active competitors for the place. Among them are Surgeon Sutherland, whose commission as colonel dates from 1876; Surgeon Bailey, whose colonel's commission bears the date of January 30, 1883; Colonel Glover Perin, Assistant Surgeon-General, whose commission dates from July 2, 1884, and who will reach the age for retirement on November 17, 1887, and Thomas A. McParlin, whose colonel's commission is dated September 10, 1875, and who will reach the age of sixty-four on July 16, 1889.

Among officers below the grade of colonel there are several candidates whose friends hope for their success. One of them is Lieutenant-Colonel Joseph R. Smith, who was appointed an assistant surgeon in 1854 and was promoted to the rank of full surgeon with the grade of major in 1862. His commission as lieutenant-colonel bears date January 9, 1885. Colonel Smith stands high in his corps and it is understood that influential friends are urging his promotion. Another officer who has strong backing is Surgeon Basil Norris, whose commission as lieutenant-colonel was issued December 14, 1882. The friends of Surgeon John S. Billings are pressing his claims with vigor. He received his commission as major in 1876. Besides the candidates above mentioned, there are Surgeons Page, Moore, McKee, Huntingdon, and several others, and it is probable that the delay in making the appointment will bring several more candidates forward by the time the President returns from his summer vacation. It is understood that the Secretary of War has recommended the promotion of acting Surgeon-General Baxter.

**PROFESSOR GRASHEY** of Würzburg has been called to Munich as the successor of the late lamented Professor von Gudden.

**THE SIXTH INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY** will meet in Vienna, in September, 1887, instead of 1886, as originally proposed. Among other subjects the precautions, international or others, to be taken against the propagation of contagious diseases by rags; and the international regulations to be adopted against the adulteration of food products, will occupy prominent places in the discussions. Those who are interested are requested to suggest other subjects, addressing Prof. de Gruber, Brunn, near Vienna.

**DR. WM. C. DABNEY**, of Charlottesville, Va., has been elected to the Chair of Practice of Medicine, Obstetrics, and Medical Jurisprudence, in the Medical Department of the University of Virginia.

THE AMERICAN DERMATOLOGICAL ASSOCIATION will hold its tenth annual meeting at Greenwich, Connecticut, on August 25, 26, 27. The president for this year is Dr. Edward Wigglesworth, of Boston.

THE LONDON HOSPITAL SUNDAY FUND amounts this year to over one hundred and eighty thousand dollars, being \$25,000 more than it was last year.

SIR BALTHAZAR W. FOSTER.—The Queen, upon the recommendation of Mr. Gladstone, upon his retirement from office, has conferred the honor of knighthood upon Dr. B. W. Foster, President of the Council of the British Medical Association and late Member of Parliament for Chester.

DR. JAMES R. CHADWICK, of Boston, represented Harvard University at the Heidelberg Quinque-centennial.

A NOVEL PROFESSORSHIP is the establishment of a Chair of the Chemistry of Food in the University of Berlin. The incumbent will rank as professor extraordinary.

THE CHOLERA.—A cable dispatch from London, dated August 16th, says:

The Austro-Hungarian cholera returns for to-day are: Trieste, 16 new cases and 3 deaths; Flume, 3 new cases, no deaths. The Italian reports are: Barletta, 60 new cases, 30 deaths; Ruvo di Puglia, 21 new cases, 7 deaths; Bologna, 13 new cases, 5 deaths; Padua, 41 new cases, 4 deaths; Treviso, 18 new cases, 10 deaths; Verona, 6 new cases, 2 deaths; Legnago, 12 new cases, 3 deaths; Venice, 7 new cases, 2 deaths; Bisceglia, 13 new cases, 2 deaths; Acquaviva, 14 new cases, 3 deaths.

The geographical area affected by cholera exhibits the capricious behavior of this mysterious disease. Thus it is worst in Barletta, which is far away to the South, where the coast district between Monte Gargano and Brindisi is more or less affected. Thence it makes a clear leap of 300 miles to Lavena and Bologna; then turns northward, extending, though in a less virulent form, throughout Venetia, including the island of Chioggia, and reaching as far east as Verona and as far north as Castel Franco, at the foot of the Alps. It is a noteworthy fact that the places most seriously threatened lie in the centre or on the edge of marshy plains formed by the alluvial deposits of rivers or the silting of the sea, which always induce more or less malaria at this season of year.

THE late DR. MOXON had a mind which habitually saw the humorous side of all things; every event and every statement seemed to be present to his mind in two aspects, and many of his sayings would be well worth preserving. His description of some of the aspects of the teetotal movement as "intemperate abstinence," and his definition of syphilis as "a fever diluted with time," are instances in point. As a teacher of materia medica, the shafts of his satire were frequently directed against inert drugs and obsolete formulæ; of elm-bark, for instance, he vouchsafed no further information than that the wood was "good for making coffins." His grave discussion of the motto of Guy's Hospital, "Dare quam accipere," whether it had

not reference to the stock mixtures, not only raised laughter at the time, but served a useful purpose by drawing attention to the fact that some of these old-fashioned remedies were horribly nauseous, and probably not very active.

## NOTES AND QUERIES.

### POISONING BY OXALIC ACID USED LOCALLY.

A MEDICAL friend from the country has just informed me of a case which he was called upon to treat: a woman, who applied a quantity of oxalic acid, in substance, to the vagina, or os uteri, and when seen by the doctor she was suffering from both local and constitutional poisonous effects of the application. What would be the proper treatment in such a case? What would be the best remedies to eliminate the poison from the system?

L. C. H.

COLUMBUS, OHIO, August 12, 1886.

### OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT OF THE U. S. ARMY, FROM AUGUST 10 TO AUGUST 16, 1886.

MAGRUDER, DAVID L., *Lieutenant-Colonel*.—Promoted to Surgeon, with rank of Colonel, July 26, 1886, vice Brown, retired.

ALEXANDER, CHAS. F., *Major*.—Promoted to Surgeon, with rank of Lieutenant-Colonel, July 26, 1886, vice Magruder, promoted.

CRONKHITE, HENRY M., *Captain and Assistant Surgeon*.—To be Surgeon, with the rank of Major, July 26, 1886, vice Alexander, promoted.

WALKER, FREEMAN V., of Georgia.—Appointed Assistant Surgeon, July 27, 1886, vice Cronkhite, promoted.

STERNBERG, GEO. M., *Major and Surgeon*.—Granted leave of absence for fifteen days.—S. O. 186, A. G. O., August 12, 1886.

TREMAINE, W. S., *Major and Surgeon*.—Sick leave further extended six months.—S. O. 187, A. G. O., August 13, 1886.

HOPKINS, W. E., *First Lieutenant and Assistant Surgeon*.—Ordered from Fort Lowell, Arizona Territory, to Angel Island, California, for duty as Post Surgeon.—S. O. 64, *Division of the Pacific*, August 6, 1886.

MASON, CHAS. F., *First Lieutenant and Assistant Surgeon* (recently appointed).—To report by letter to the Commanding General of the Department of the East for assignment to duty.—S. O. 187, A. G. O., August 13, 1886.

### OFFICIAL LIST OF CHANGES IN THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING AUGUST 14, 1886.

WALTON, THOMAS C., *Surgeon*.—To remain on present duty until September 1, 1886.

WHITE, C. H., *Surgeon*.—To remain on present duty until August 21, 1887.

RUSH, C. W., *Passed Assistant Surgeon*.—Authorized to delay ten days, under orders to Sitka, Alaska.

LUMSDEN, G. P., *Passed Assistant Surgeon*.—Ordered to hospital, Mare Island, California.

BALDWIN, L. B., *Passed Assistant Surgeon*.—Ordered to the U. S. S. "Ranger."

NEILSON, J. L., *Surgeon*.—Detached from the U. S. S. "Ranger," proceed home and wait orders.

### OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE WEEK ENDING AUGUST 14, 1886.

CARTER, H. R., *Passed Assistant Surgeon*.—Granted leave of absence for thirty days, August 12, 1886.

GLENMAN, A. H., *Assistant Surgeon*.—Granted leave of absence for thirty days, August 9, 1886. To examination for promotion, August 12, 1886.

PETTUS, W. J., *Assistant Surgeon*.—When relieved at Savannah, Ga., to rejoin station at New Orleans, August 13, 1886.